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Local vendor snaps up UK's Ultranet to build under licence

Packet 'cure' for Lan woes

Neil McKellar (left) and Ivor Stoneman sign the agreements

By Maggie Macrae

MELBOURNE — A new networking system claimed to cure most of the connectivity problems in a multivendor environment has made its debut here.

Based on packet-switching and cluster controller technology, the UK-developed Ultranet was released by Professional Australian Systems (PAS), which is to make and market the product in Australia.

According to Ivor Stoneman, managing director of communications specialists Ultranet, the system lets different terminals, PCs or workstations be networked with previously incompatible systems. The Ultranet system includes transparent protocol conversion that lets users continue to use terminals in their native mode.

"Using Ultranet, each terminal type can be used as a universal terminal, which can then communicate and exchange files with ICL, IBM, Wang, DEC, Prime, Tandem, Fujitsu and Concurrent Computer hosts," Stoneman said.

"It can also used with X.25 value-added networks such as McDonnell Douglas (Tymnet), as well as with MS-Dos and Pick-based computer systems." OS/2 suppport is to be announced in the near future.

Stoneman said his company had in-

(Continued page 2)

Q-Net up — for peanuts?

BRISBANE — Q-Net is a tender issue at present for the Queensland government, but the money is on the local boys making the running.

Knowledgeable industry sources said a consortium led by National Party supporter Sir Justin Hickie was expected to have its tender for the Aussat-based communications network accepted over those from Telecom and the Bond Corporation.

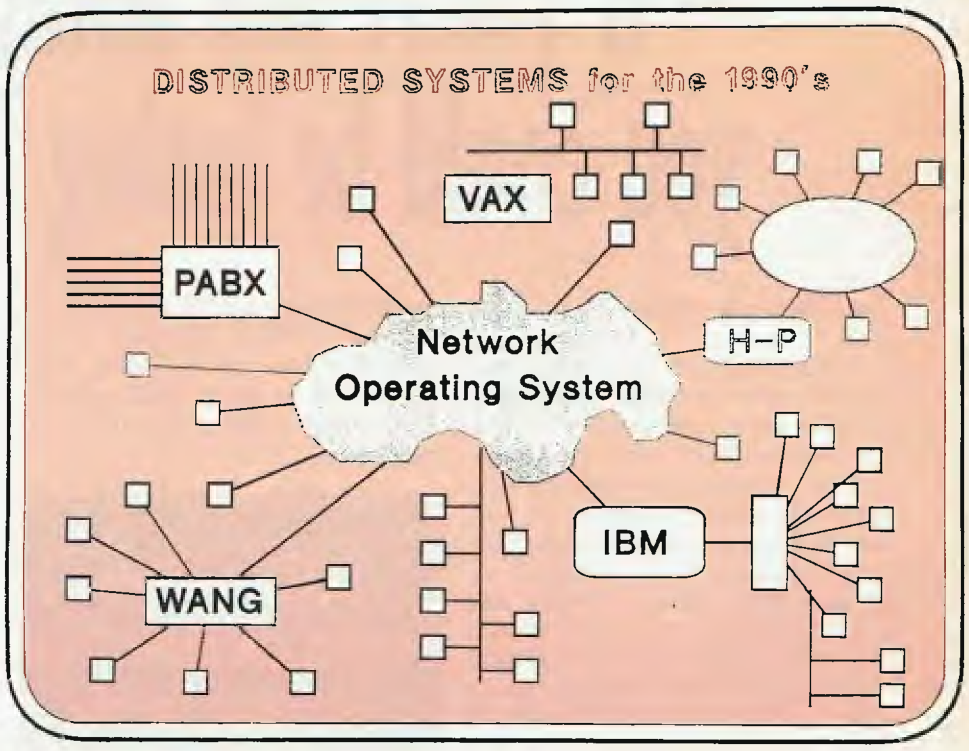
Sir Justin — honored for his $A100,000 donation to a Kingaroy orphanage — is part of the Communet consortium which also includes senior NP president Don McDonald, western zone vice-president Lady Logan and former northern zone chairman Alan Metcalfe.

He is chairman of some 32 companies and lives in a palatial home on the Gold Coast, where he was active in rezoning moves. Now 59, he left school at 14 and worked in his father's leathergoods business for 20 years before building an insurance business later sold to a Dutch group.

A Cabinet decision on Q-Net's future was imminent as *Communications World* went to press.

The successful tenderer will have the right to provide voice, data and television video through Q-Net's leased Aussat transponder under the State government's scheme of making the network provide a commercially viable service to remote areas.

Quantum leap forecast in connectivity



SYDNEY — A quantum leap in connectivity will be made during the next five years, with as much innovation packed into this period as was achieved in the previous 20 years, Hamersley Iron's chief information advisor Graham Free told delegates at the Comdex conference/exhibition here.

Free, who can lay claim to having been Australia's first corporate CIO (Chief Information Officer), said distributed processing, for example, would grow by several orders of magnitude. "You ain't seen nothing yet," he said in his keynote address.

The "creeping plague of PCs" would see CPU power grow by an aggregate 50 per cent a year, I/O technology would change dramatically ("the PS/2 Presentation Manager is a quantum leap over the Mac interface"), and PTTs would derive the vast majority of their revenues from data transmission, Free forecast.

He predicted the emergence of an overall network operating system that would take care of the linkages between different systems in an increasingly pervasive multi-vendor enviroment. Hamersley was experimenting with a pilot system using connectivity software from Soft-Switch, he said. (See story page 6.)

Trends during the transition to such a network operating system would include:

- Increasingly prevalent distributed processing;
- Distributed acquisition through "co-operative micro- mainframe links";

(Continued page 9)

Pan Am plans Far East satellite centre

HONG KONG — A US joint venture plans to build a $US200 million satellite communications centre in the Far East, with Hong Kong and Singapore named as the front-running contenders.

The Pan Am Pacific Satellite Corp, a joint venture between Pan Am Commercial services and the Johnson Geneva Corp of New York, is looking for more than 20 acres of land for its planned teleport and satellite control facility, which will employ several hundred people.

The satellite command centre complex will control a state-of-the-art satellite communications system which will, as early as next year, provide the people of the Asian Pacific region with a host of new cost-effective telephone, radio and computer-based services. according to a spokesman.

These services would include cheaper calls to China, direct broadcast of TV programs to individual homes, and data networking of financial institution, hotel and airline reservations systems via Pan Am's "birds", the first to be launched by China in 1988.

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Microvax III debut near

DEC's latest darling is previewed on — page 6

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CORE REPORT

on intelligent buildings starts on page 12

Twisted-pair Ethernet

The race is on in the 10M-bit/sec lane — page 31

USSR to get PC paper

MOSCOW — An agreement was signed here late last month to establish PC *World/USSR*, the first US and USSR joint publication project between IDG Communications Inc, the parent of the global Computerworld publication family and the USSR State Committee for Publishing and Printing.

The directors of the Russian language bimonthly which will be published in the second quarter of next year include representatives of the State Committee for Computer Systems, which approves Soviet imports of computer systems into the Soviet Union.

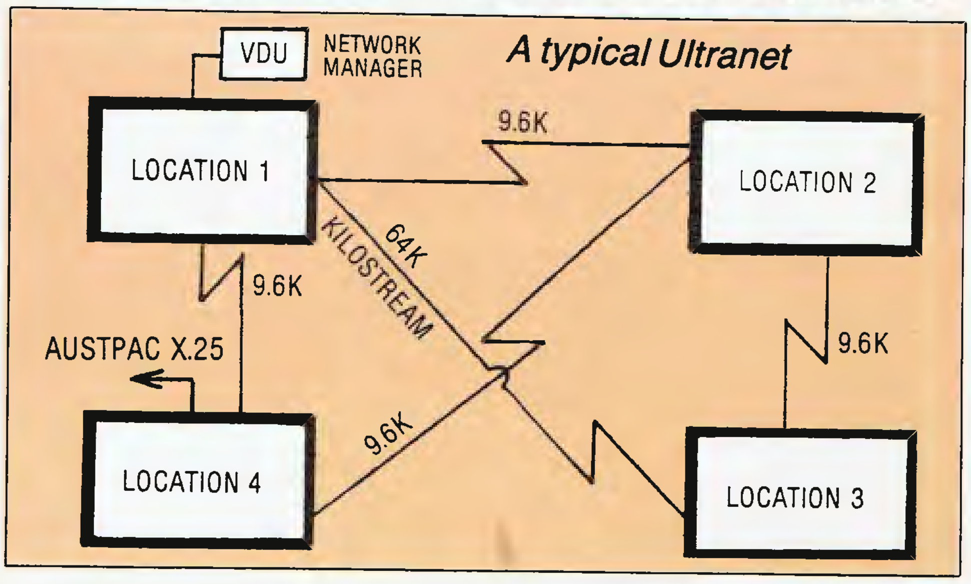
According to Axel Leblois, chief executive officer of IDG Communications, the market for PCs in the USSR is expanding rapidly, with over 1 million micros set to be sold to Soviet schools alone during the next three years.

"This joint venture closes the loop of IDG Communications' publishing network which now reaches 33 countries with over 90 publications," Leblois added.

Alan Power, vice-president, Asia/Pacific for IDG and managing director of Computerworld Pty Ltd in Australia said *PC World/USSR* would be a valuable sister publication to *Computerworld, PC World, Communications World, Digital World* and *Macworld* as it would provide readers with direct access via the IDG online news network to the progress of the Soviet information industry and computer applications.

"Perhaps more important, it will provide market opportunities and knowledge to entrepreneurial Australian hardware and software companies," Power added.

Packet Lan's debut



A typical Ultranet

(Continued from page 1)

stalled about 100 systems in the UK but the beta test version now with PAS — in a mixed Prime, DEC, Wang and IBM environment — was the first outside the UK. "The systems we have installed in the UK can support more than 500 users each. Theoretically, user support can run into the thousands," he said

Neil McKellar, PAS managing director, described the Ultranet system as highly significant for the industry. "All future computer decisions can now be made totally free from the constraints of past decisions and investments: compatibility and connectivity," he said.

"The system has applications for any user wishing to interconnect terminals between different host systems, as well as offering potential savings and clearer communications even where two systems are compatible."

McKellar pointed out that Ultranet was "not merely an X.25 protocol converter. It is a sophisticated system that permits communications at user level and not just between boxes, as do other products."

The desktop system has 14 card slots and packs networking hardware and software — X.25 conversion and X.25 communications carrier control — that makes the host transparent to the terminal.

Each system node operates as a cluster controller, with connections for up to five incompatible systems. The system uses a range of packet-switch exchanges (PSEs), packet assembler/disassemblers (Pads) and X.25 converters.

The nodes are modular and programmable, letting the user tailor the system to suit traffic volume, user requirements and physical address. Nodes can be used singly or linked into a private or public packet-switching network. Nodes have built-in network management facilities.

Terminals attached to a single node can communicate with each other directly, or they can use a single X.25 line to connect with all host systems on the network. A range of protocol conversions is available for individual requirements.

Both McKellar and Stoneman emphasised that Ultranet is not an off-the-shelf product but a customised solution. And neither would talk about pricing for a typical configuration.

"There is no such thing as a typical or minimum configuration," Stoneman said. "The user's solution must be tailored for every site." But he added that software modification would be minimal.

Ultranet is available in five versions: Mininode, PC80 PSE/Pad, ME80 PSE/Pad, MS-Interact (for PCs) and Total-Interact.

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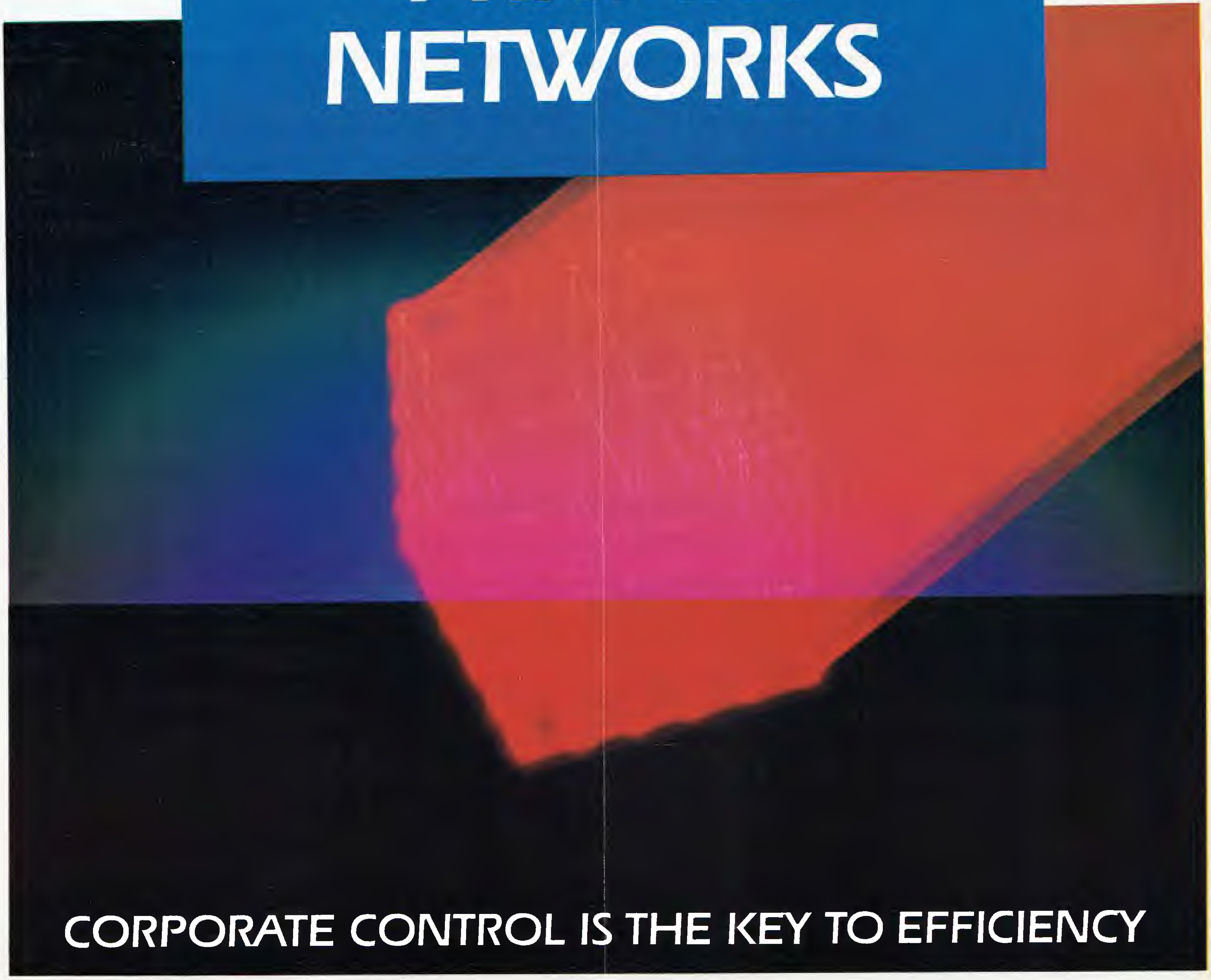
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Rolm-based credit network

SYDNEY — The Credit Reference Association of Australia is planning an Australia-wide distributed voice network based on small IBM Rolm PABXs to help share the load of some 15,000 credit enquiries a day between its State offices.

CRAA recently installed the first two Rolm VS-CBX (very small computerised branch exchanges) to come off the Wangaratta, NSW, assembly line in its Perth and Brisbane branches.

They are part of a $A500,000 order of four by the non-profit organisation, whose 4800 members include banks and other financial institutions, insurance companies, utilities and companies. (Distributing the cost of the switches over the around 5 million calls in a year, each enquiry would cost 96c to answer, apart from operator and other overheads.)

The Rolm VS-CBXs, each handling up to a maximum of 144 lines, permits automatic call distribution and comes with software that lets CRAA management keep close tabs on the performance of the system.

According to CRAA assistant general manager, information systems, Doug Marshall, in the past many members gave up trying to get through at peak times. "Now even when all operators are busy, they (the members) are able to get through and listen to music until one is free."

Staff productivity and morale had improved and operators were more pleasant to deal with, he said. The automatic call distribution system also let supervisors monitor traffic levels on a personal computer, and react to demand surges by increasing manning levels.

Reports available highlight workloads by groups and individual operators; variances; overflow requirements, peak periods; number of abandoned calls; number of calls waiting and length of time callers spend in a queue.

"Automatic call distribution was high on our list of requirements because it automatically routes incoming calls to overflow extensions," said Marshall.

An unexpected benefit for CRAA operators who have left to care for their families is telecommuting through the digital Rolm switches: "We have now installed terminals in the homes of some former operators so that they can carry out maintenance work on the files," Marshall said. CRAA, Australia's biggest credit reporting agency, holds records of more than six million consumers and trading organisations on file.

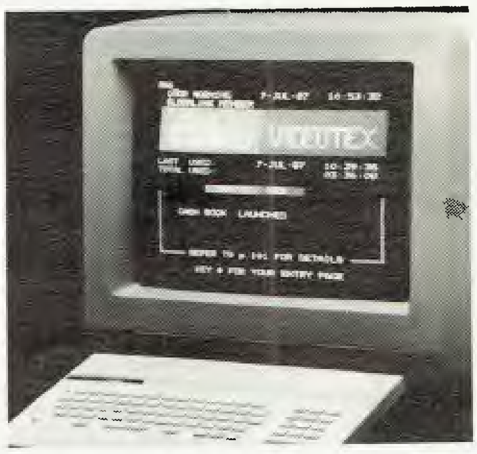
An Australia-wide network of Rolm switches is another possibility. "When operators are quiet in, say, Perth, they could take some Brisbane, Melbourne or Sydney enquiries and smooth out any peaks around Australia," said Marshall.

Elders puts $A5m into data service

SYDNEY — Elders Pastoral has ploughed $A5 million into its Elderlink information service, buying 2500 Tandata videotex terminals and Thomson monitors for new subscribers.

The terminals, bought from Australian distributor GEC, will be leased to clients for $45 a month. Elderlink's current subscriber base is 2700, which puts the specialised rural/business offering at a respectable 10 per cent of Telecom's Viatel base.

Elders videotex general managerJeremy Cape recently described Elderlink as the "best-kept secret" in videotex in Australia even though its applications, such as the Price Waterhouse Sharemaster package available on the service, put it at the front of VTX technology worldwide.



The Tandata 2500 Td videotex terminal, with Thomson monitor.

He said Thomson-CSF of France had been shown Sharemaster and was interested in applying the program to the French videotex system.

The Tandata 2500 terminals, selected after a nine-month evaluatation of 26 potential suppliers, come with specially customised keyboards to ease interactive use of the various online databases and can accommodate both pulse and tone dialling.

Cape said: "We place great emphasis on the interactivity of Elderlink. The ability to store pages, and to communicate terminal-to-terminal are just two critical features of the Tandata which compliment this interactivity."

A Cashbook service for rural subscribers, the first such videotex offering in Australia, is to be followed soon by a commodities package.

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Sync Loss          0
Menu 1 Menu 2 Store     Dump              Run

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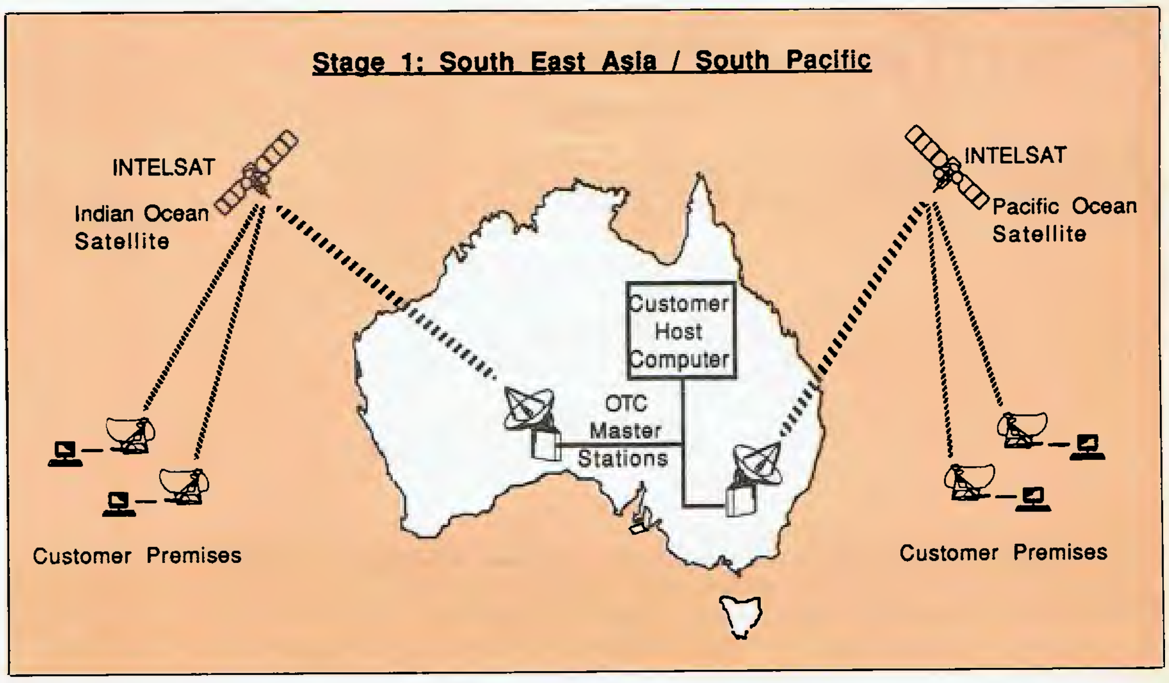
OTC, Equatorial in $3.5m satellite equipment deal

SYDNEY — The Overseas Telecommunications Commission (OTC) has ordered $A3.5 million worth of small dish satellite data communications equipment from Equatorial Satellite Systems Australia.

The Equatorial connection is intended to bolster OTC's bid to make Australia a regional hub for business in the South Pacific and South-East Asian areas through its Satnet international Vsat offering. These ambitions are strongly rivalled by both Singapore and Hong Kong.

Under the contract, Vsat master stations will be set up at OTC's Sydney and Ceduna earth stations, and a system control centre installed at the commission's Broadway, Sydney, communications gateway.

Telecom tielines would link a customer's mainframe in Australia to the master stations for communicating with micro earth stations at customer sites in the two regions via Intelsat's Pacific and Indian Ocean satellites. (See diagram)



The commission plans phased introduction of the star- configuration Satnet service "in response to demand", with X.25 packet-switching support and SNA protocol support promised for the end of this year.

It says business response to a number of customer trials "has been tremendous" since the service was announced last year. Many organisations were interested in Satnet for applications such as travel bookings, remote automatic teller machines, and access to remote mining and exploration sites. But database access, electronic mail, facsimile transmission and office automation functions are equally suitable applications.

Satnet is intended to support low-volume periodic interactive transactions. OTC describes Satnet as having all the advantages of private line service without the cost penalty for a full private line.

New 'connect' permit fees

MELBOURNE — Telecom will levy new charges for issuing authorisation-to-connect permits to equipment suppliers.

Authorisations to connect voice equipment, which have been subject to annual renewals but no fees since 1984, are no longer required.

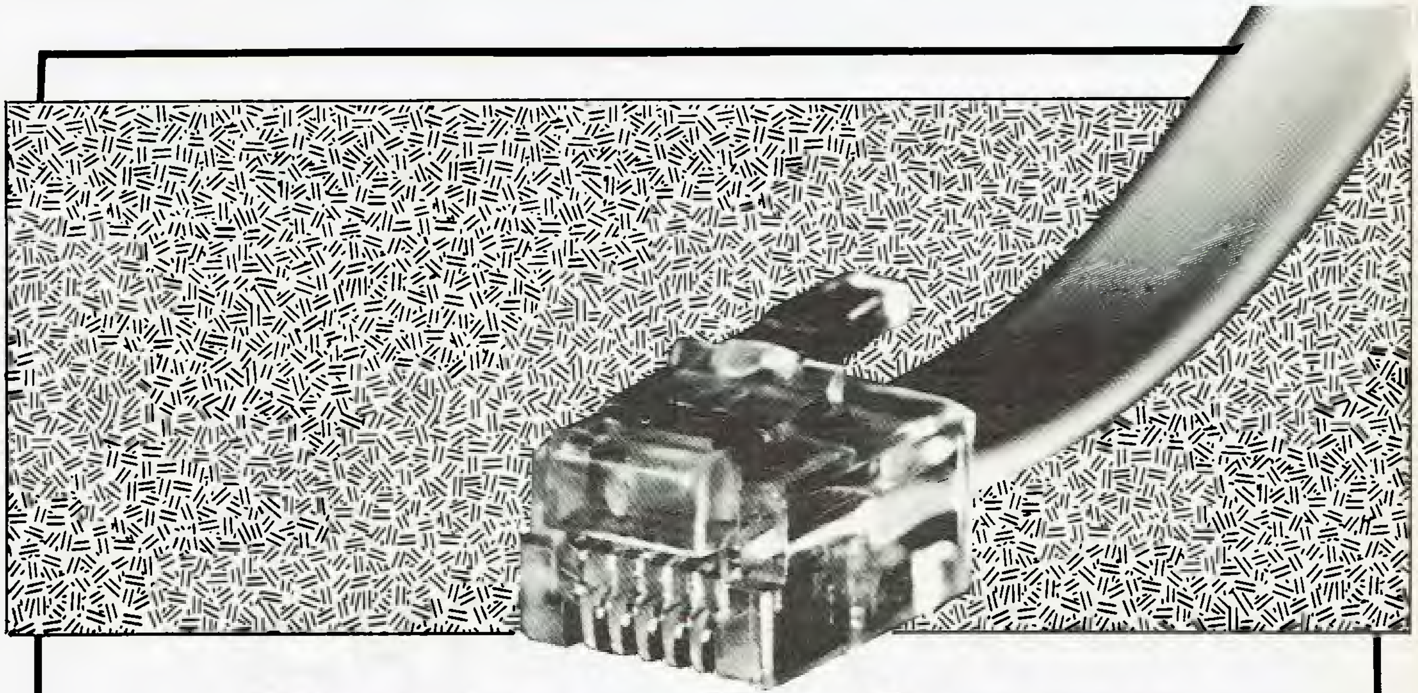
Commenting on an article in the July issue of *Communications World* which quoted an industry source giving details of a purported Telecom plan to drastically increase such charges, the commission's regulatory branch volunteered the following information.

The **basic charge** to obtain authorisation to connect privately supplied equipment such as facsimile, to the Telecom network, will be $A700, with a $A150 annual renewal fee, from next July.

The $A5000 fee mentioned by *Communications World* refers to category "A" authorisation for Data Terminal Equipment (DTE) and Direct Connect Equipment (DCE). This allows a qualified supplier to "self-certify" its products. The annual registration for this type of authorisation is $A800 (DTE) and $A1500 (DCE).

Wyse opens own local sales office

SYDNEY — Wyse Technology has opened a sales office in Sydney to provide technical and marketing support to its distributors and resellers in Australia and New Zealand. The US maker of terminals and PC compatibles aims to boost sales in the region by 50-100 per cent a year, according to regional sales manager Alan Stoops, who heads the new operation.



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Centre stage for the Microvax III

By Edward Warner

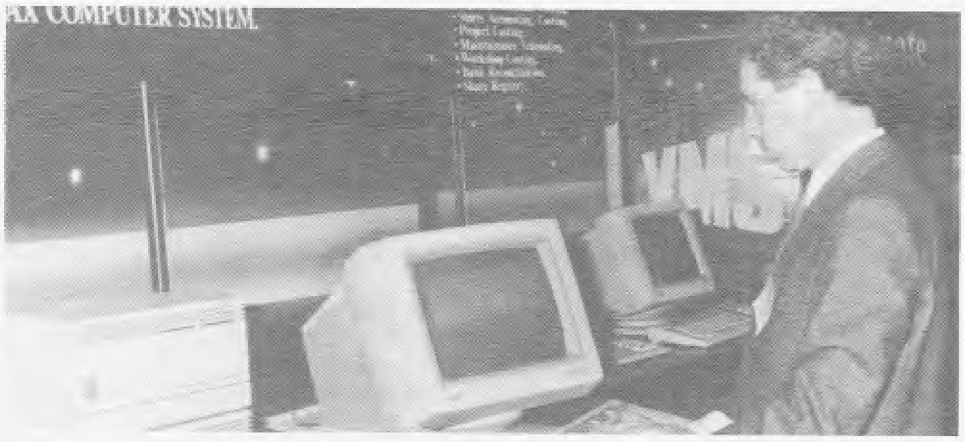
BOSTON — The Microvax III, a desktop workstation offering three times the processing power of its predecessor, will highlight the product introductions on September 9 at DEC's nine-day Decworld exhibition here.

Sources close to DEC said the Microvax III will use a redesigned, complementary metal oxide semiconductor (Cmos) version of the proprietary 32-bit chip that powers the Microvax II. They added, however, that the Microvax III will be capable of processing some 3Mips (million instructions per second), making it 200 per cent faster.

The new entry, said to be the size of DEC's Rainbow personal computer, will run a full implementation of DEC's VMS operating system, not the Micro VMS used in the Microvax II, said a source at a major DEC installation.

DEC declined to comment on the machine or to confirm its existence. One source close to the company, though, said the Microvax III is already in production and there will be limited quantities at introduction.

Sources said the Microvax III will offer highend features, including a builtin Ethernet adapter, but will not offer the proprietary Backplane Integrated (BI) bus of DEC's Vax series minicomputers. Instead, it will retain the Microvax II's Q-bus to enable it to use its predecessor's peripherals. This would also help avoid dissension among the independent peripherals vendors who would otherwise have to license the BI bus.



The GT Microcomputer stand at Comdex'87 saw the worldwide launch of DEC's Australian-designed VT225 terminal. Also shown were the new Microvax 2000 (photo), VT330 and VT340 terminals

According to the sources, pricing has not been set, but they indicated that the low-end Model 3200 will cost between $US20,000 and $US40,000 and come equipped with at least 8 megabytes of Ram. In comparison, the Microvax II costs $US20,000 to $US60,000.

Several analysts said those prices, if accurate, were probably designed to avoid cannibalising the rest of DEC's line, and will not immediately affect sales of workstations from competitors such as Sun Microsystems.

DEC's micro strategy — P20

OS/2 'retrofit' card updates any old PC

By Tom Moran

SUNNYVALE, California — Owners of IBM PCs, PC XTs, and compatibles will be able to run OS/2 on their systems using a new card developed by Sota Technology, called the Mothercard 5.0.

Unlike standard 286-based accelerator cards for PCs and XTs, the board is said to provide nearly complete AT functionality. It cannot accept addin boards for the AT, and it includes a chip that steps the 286's 16-bit bus down to the 8-bit bus of the 8088 machine.

The Mothercard's most salient feature is that its Bios is stored in battery-backed Ram that can be upgraded with new Bios software. That means that if future incarnations of MS-Dos or OS/2 should prove incompatible with the present Bios, the Bios could be upgraded without changes to the hardware, said Alan Hsiao, Sota's director of marketing.

"We run the Microsoft OS/2 Software Developer's Kit now, and we will support future versions of OS/2 as they become available," said Tony Chu, director of engineering for Sota.

The Mothercard 5.0 with an 8-MHz 80286 and 1 megabyte of Ram sells for $US995. 10-MHz and 12.5-MHz versions are also available. Sota also sells 1-M-byte daughtercards that start at $US375 for the 8-MHz system. Two megabytes of memory are necessary to run OS/2 on the board, according to Hsiao.

Channel device ups standard

SAN DIEGO California — Data-Ware Development recently announced a channel emulator capable of 4.5M-bytes/sec, a speed that is expected to become a standard for IBM and plug-compatible mainframes. The current channel speed is 3M-bytes/sec.

The Peripheral Automatic Channel Emulator (PACE) Model DW145 is expected to be particularly useful to developers of IMB plug-compatible mainframe peripherals, such as disk and tape drives, according to the vendor.

Hamersley ties it all up

SYDNEY — Hamersley Iron, operator of Australia's densest private Megalink network, is switching to efficient information handling as one means to counter the current ore market slump.

The company has turned to US protocol conversion specialist Soft-Switch for software that can tie together Hamersley Iron's disparate computing facilities for all forms of data communications, from electronic mail and document exchange to facsimile and voice messaging.

Hamersley Iron has a network of 11 NEC Neac PABXs, including five linked by nine private 2M-bit/sec lines in Dampier alone, and operates an IBM 3081GX mainframe with an SNA network in Perth, as well as six Hewlett-Packard HP 3000s and five HP 1000s with an X.25 network in its WA operations area.

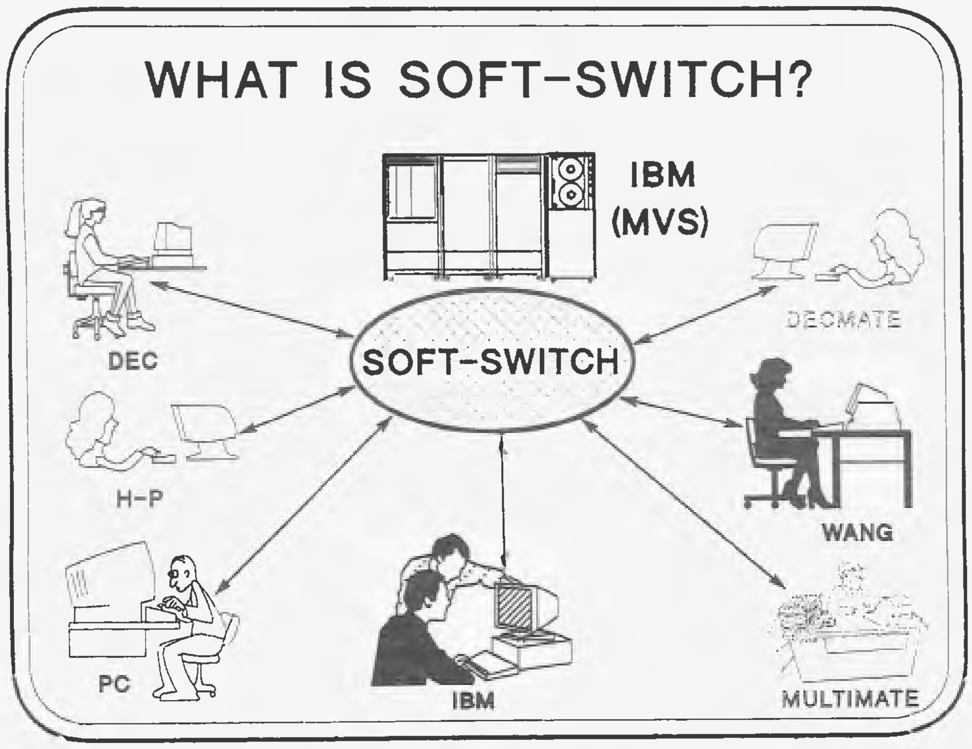
Some 220 terminals and workstations are connected to the various systems, and the company also uses 380 Personal Computers.

Chief Information Adviser Graham Free told the recent Comdex conference in Sydney that Soft-Switch software-based protocol conversion was seen as a good way to let an HP terminal, a Decmate, a Wang or IBM PC talk to each other even though the vendor as a rule provided protocol conversion to IBM standards only.

Apart from pure protocol conversion, the mainframe program caters for different wordprocessors, properly maps different control keys to alien keyboards, handles different electronic mail and the different directory structures that may appear on the various hosts.

As a pilot exercise, the company has installed the Soft-Switch program under MVS on its Perth IBM 3081GX mainframe in Perth to handle full document protocol conversion for all messages sent between Perth and Melbourne.

Additional nodes are planned for Sydney and Brisbane.



Banking by floppy disk arrives

By Steve Ireland

SYDNEY — An updated Australian-developed data entry system will allow any business with a diskette-based computer (such as a PC) to provide payroll, creditors, and plastic card transactions to banks in floppy diskette form.

Nashua Computer Systems' Diskette Transaction Entry System has been accepted by the four major Australian banks, Westpac, Commonwealth, ANZ and National Australia.

Nashua introduced its original CP/M-based system in June 1986. The new system, to be released on September 1, is based on the IBM PC AT and comes in at a third the cost of the original system. It also covers an expanded range of operating systems and features direct PC-host communication facilities in the IBM environment.

"The basic premise is that we do not believe dialup communications are for everybody," a Nashua spokesman said.

"With the new system, no technical expertise or capital investment on the part of the customer is required, and the system does not involve the same security considerations."

The bank is able to invoke automatically the appropriate conversion routine for the client by accessing a file of client numbers kept on the host. The input transactions are then written to a common MS-Dos format before writing to the host.

Each system costs about $A20,000 to $A30,000, depending on the configuration of data cartridges, tape drives, and so on. One bank already has more than 100 customers using the diskette entry method in Sydney alone. At present the diskettes must be processed at a central data centre, since they must first be transcribed to tape.

Shuttle moves

MELBOURNE — Melbourne-based Shuttle Datacomm has opened a NSW sales office at North Sydney, and appointed Sid Thorpe as sales executive for its wiring and networking products. Branch manager, Michael Jennings, will concentrate on modems, multiplexers, port controllers and printer sharing devices.

NEC takes ISDN plunge

By Yasuko Yoshimi

TOKYO — NEC Corp will showcase a variety of ISDN-based (Integrated Service Digital Network) telecommunications equipment, including the IST-2000 broadband video communications terminals, at Telecom '87 in Geneva.

The company announced that during the eight-day "Telecom Olympics," starting in the Swiss city on October 20, NEC will display 178cm wide screens to demonstrate the multifunctional terminals that can send voice, data and images simultaneously at a speed of 140M-bit/sec.

The IST-2000 will be linked with a next-generation optical switching system and private branch exchange. NEC's ISDN-based PABX, called Neax 61, can handle 16 telephone channels and is designed to interface with both narrowband and broadband communications terminals as well as to handle high-speed packet switching at the speed of 1.5M-bit/sec.

NEC is also scheduled to exhibit a new breed of optical switching system with an 8 by 8 switching matrix.

Other ISDN products NEC plans to exhibit include three low-end workstations in the IST series, the Model 200, 400 and 1,000; and the Neax 2400 IMS local area network switching system.

NEC will also show the NMS (Network Management System), an artificial intelligence system for expert control of networks, a 70km fibre-optic transmission system as well as a small satellite link. All of these networks will reportedly be tied together in NEC's booth.

NEC Chairman Koji Kobayashi will give the keynote speech, focusing on the company's "Computer & Communications" theme.

Information Network boost into expanded EDI market

By Bob Wallace

Big Blue looking to increase its role in the industry

NEW YORK — IBM, seeking to increase its role in the electronic document interchange (EDI) industry, is trying to convince both current and prospective EDI users to use the IBM Information Network for such interchanges.

The 5-year-old IBM value-added network already carries a limited amount of EDI traffic, enabling users' mainframes to communicate with one another.

EDI industry watchers said they expect IBM to increase the network's EDI capabilities. The network offers services that support communications using the ANSI X.12 data interchange EDI standard, the US grocery industry's Universal Communications Standard and a few others.

EDI is the computer-to-computer exchange of standard- formatted business information, enabling companies to perform such actions as placing orders, issuing invoices and initiating corporate trade payments electronically.

IBM may be hoping to position the Information Network as an EDI clearing house, performing the translation services necessary to link the different makes of computers used by manufacturers and their suppliers. IBM could also provide the data delivery services needed to establish these links.

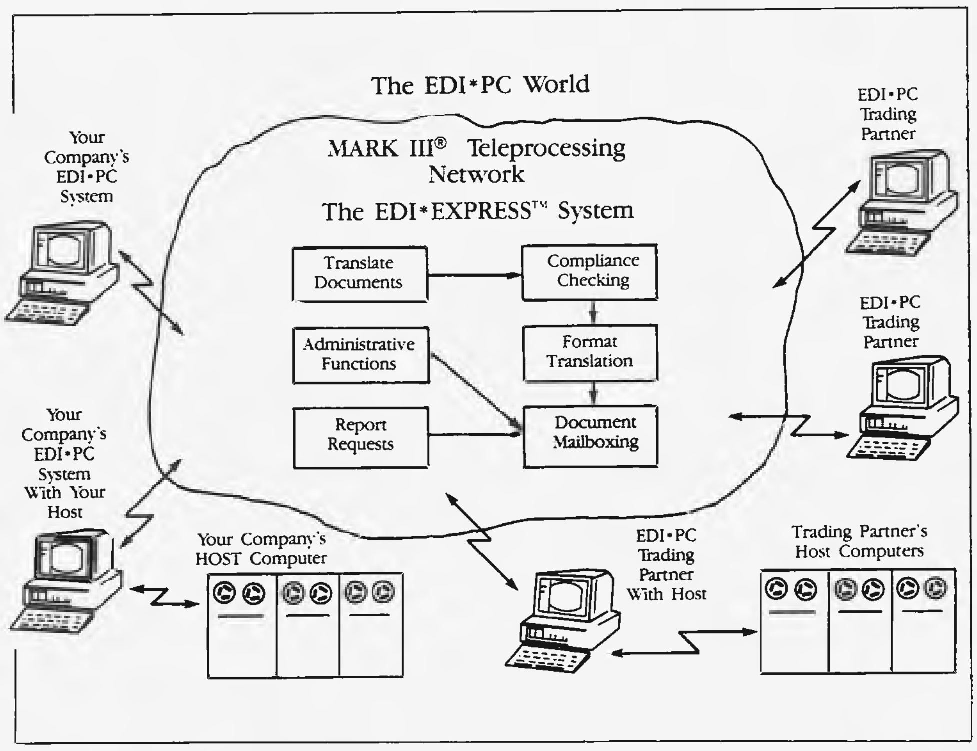
The IBM meeting follows an announcement by Telenet Communications Corp and Sterling Software's Ordernet services division, a Columbus, Ohio-based EDI network provider, marking Telenet's entrance into the EDI services market.

Under the arrangement, Telenet will resell Ordernet's EDI services. The value-added network carrier said its EDI service will be available in the fourth quarter of this year.

IBM is expected to encounter stiff opposition from such EDI value-added network service providers as General Electric Information Services Co, McDonnell Douglas (Tymnet), Sterling Software and Control Data Corp.

Analysts do not expect present EDI users with their own or third-party facilities to switch to the IBM Information Network unless given major price breaks. But companies not already using or operating EDI networks may be attracted to the IBM Information Network, especially if they are IBM data processing shops.

"IBM's increased presence in the EDI service market would comfort users who are thinking about using EDI networks but are concerned about vendor commitment to the market," said one industry watcher.



United flies with big European carrier net

BRUSSELS — United Airlines has teamed with three European airlines in a venture to build a European travel reservation network — abandoning efforts to tie European travel agents into its existing Apollo reservation network.

United's Covia Corp — which markets the Apollo system to US travel agents — with British Airways, KLM Royal Dutch Airlines and Swissair, will invest a total of $US120 million to develop the European network.

The announcement comes just three weeks after Air France, Scandinavian Airlines System, Lufthansa German Airlines and Iberia Spanish Air Lines announced a joint $US300 million venture to form the Amadeus reservation network.

Covia's group plans to link together the independent IBM systems now used by all three European air carriers by the first quarter of 1988, although software needed to make the new network fully operational will not be ready until early 1989. The Amadeus group plans to be online in mid-1989, after swapping out the Unisys equipment its members now use for IBM hardware.

Covia said IBM's Personal System/2 may play a role in the as yet unnamed network. The Personal System/2 is part of Covia's Focalpoint system, which enables US travel agents to use the Apollo workstation to make flight, hotel and car rental reservations as well as perform office accounting and information management tasks.

Both Covia's group and the Amadeus group announced plans nine months after a $US500,000 study commissioned by the 21-member Association of European Airlines (AEA) recommended that AEA members should merge their 10 separate reservation systems into one network that would block both American Airlines' Sabre and Covia's Apollo networks from gaining a firm foothold in the European market.

"The AEA has been pregnant for nine months. We now have to recognise that we have given birth to twins, something we really did not plan for," said an AEA official.

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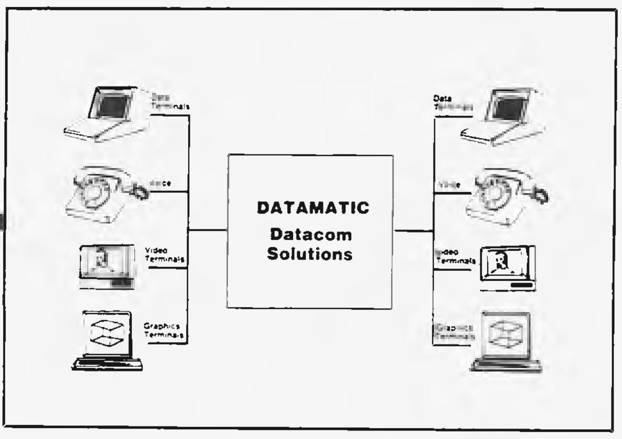

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Opinion

EDITORIAL

Q-Net raises some new questions

EVERYTHING flows, as the Greek theoretical physicist from Alexandria used to point out during his discourses in the baths. As one State builds itself a communications network — with a little bit of help from experienced and uninterested friends — another prepares to divest itself of its pioneering network — with its inexperienced but avowedly interested friends helping themselves.

(Perhaps one should have started by saying that 'what goes up must come down', but it would not have been propitious on the eve of the launch of Aussat 3.)

It will be clear by now that we are referring to the impending Queensland Cabinet decision to award Q-Net to the chosen one among the three bidders on the short list — and unless there are major upsets it will not be Telecom or the Bond Corporation but a relatively obscure outfit that will emerge clutching the prize.

For a commercial plum the new Q-Net is intended to be, and if an alliance of National Party stalwarts, including the benefactor of a Kingaroy charity, benefit is there anyone outside Scarborough Beach who would begrudge them the pickings?

The fallout must add to the pressures for telecommunications deregulation, what with Q-Net's future use of its licences and the position of a key shareholder on its principal carrier.

Such deregulation arguments were seldom expressed more clearly and cogently than by Q-Net's architect Doug Rowell, who slashed through Telecom's protective policies with the scalpel of a sharp mind and the steady hand of a high-level communications practitioner on numerous occasions.

Even he has warned, however, that "the wholesale sell-off of Telecom is not the answer, as we could change one public sector bureaucracy for a private sector bureaucracy".

Rowell has repeatedly demonstrated a more long-term perspective on what change is necessary in Australia's telecommunications policies and how it may be managed. Some time ago he presented to an AIIA meeting a five-year plan for evolution that would be much less painful and much more effective than revolution.

It included such points as: restricting Telecom's monopoly to the basic telephone network; opening all value-added services provided on the basic network to private competition; setting up an independent authority to manage regulations and policy interfaces between the carriers and the private sector; ending the board-level linkages and ownership by Telecom in Aussat; vertically integrating the national and international carrier; and establishing a national telecommunications strategy that takes into account infrastructure, industry, education and so on.

His address, last November, ended with a couple of questions: Do we believe that this presents a viable option for change? And, Who is responsible and capable of orchestrating such a change in the interests of all Australians?

The leadership of the Australian Telecommunications User Group is, I understand, open to suitable candidates. I suggest that readers who are also members of Atug reflect on whether Doug Rowell should not head the ballot.

I suggest that this would be a suitable position from which to engender the spirit of change that users are demanding. I suggest that it would be a suitable position from which to proceed to the job that Doug Rowell would be most qualified to perform: to orchestrate change from what may become known, in deference to its UK model, as Austel.

I have not canvassed Doug Rowell's opinion on these matters. I suggest that you do.

Luis M. Huesch
Editor

It ain't fair!

TELECOM is circulating among its top brass an internal "war" document detailing alleged "unfair practices" by its commercial competitors, in particular suppliers of small PABXs. (We'll come back to that later).

The reference to unfair practices in the PABX area is particularly intriguing: *Local Loop* is reliably told that people submitting documents to Telecom for approval of a new switch installation get Telecom sales people calling within 24 hours trying to switch the order.

One argument used is speedy provision of exchange lines — apparently there *is* a way to jump the often lengthy queue to getting lines installed: buy a Telecom-supplied switch.

Atug is collecting evidence of such breaches of Telecom's own professed code of practice, but people in the business are understandably reluctant to document these things because of the potential repercussions, last but not least from Telecom unions.

Local Loop

MCI mail gets through

CORPORATE communications (read:company press releases) have reached a new level of "sophistication" with the arrival in Australia of the MCI Mail Letter. We received four such messages the other day, all from the same company, a PR outfit in California.

The original perpetrator of such "communications" files the text into the MCI Mail system as e-mail. This is then zapped to Australia Post in Melbourne, where the text is printed out on a laser printer, complete with cover sheet.

The lot is stuffed into an evelope and mailed out to the recipient by Priority Paid Mail. It eventually — allow for the weekend — reaches your desk and presto, you've got an instant story.

The release carries a Sydney dateline, which puzzles you at first and makes the process look even more gratuitously roundabout. It must cost a packet — but then PR companies are used to "pocket-switching". Too bad for the client that the release is usually filed in the wastepaper basket. . .

Switched off

THE socially responsible entrepreneur-cum-carrier Telecom is reported to have lost "heaps" of account managers since it began attempting to switch them into straightout sales positions — with an accompanying cut in salary.

And, it appears, the unions in two States have taken opposing views on the policy, with the Victorian militants adamantly against the idea, while the NSW union is all for it.

Way clear for line concentrators

MELBOURNE — Telecom has struck a deal with its linesmen's union (APTU) that will allow the commission to go ahead, after protracted industrial difficulties, with the installation of line concentrators.

These devices allow between 16 and 240 telephone circuits to be concentrated on to existing cables, and their installation would drastically reduce the waiting time for telephone connection of rural customers.

Linesmen, aware that the concentrators obviate the need for much new cable installation in the country to cope with demand, have in the past refused to allow the equipment to be installed. Cable manufacturers, it appears, were not unhappy with this stance.

It was not immediately known what arrangement Telecom made with the union as the agreement must yet pass Arbitration Commission scrutiny of the entire so-called second-tier wage negotiations between Telecom and its unions. Telecom industrial relations manager Brian Cook said the line concentrator issue was "part of a series of agreements" on which a detailed submission had been put to the Arbitration Commission. He expected a ruling would be handed down by mid-September.

Sources said that settlement of the line concentrator question would permit Telecom to plan ahead better and to defer capital expenditure on cable.

One of the companies that would be affected by any forthcoming orders for line concentrators, Melbourne-based Telspec Pty Ltd, said a small number of its British Telecom-designed line concentrators had been "field trialled" in Australia. But the company did not know whether Telecom had started its tendering processes yet.

US vendor Lynch is another potential entrant in the field with large line concentrators.

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More net vendors commit support to ISO protocols

By Mary Petrosky

SAN FRANCISCO — In a push to allow computers from multiple vendors to communicate across local networks, an increasing number of net vendors are committing support to protocols specified by the International Standards Organisation (ISO).

Commitment to ISO varies widely among local-area net makers, some saying they can deliver products today, while others are still taking a wait-and-see stance. All agree, however, with ISO's long-term goal: to enable dissimilar makes and types of computers to interoperate as easily as components of a stereo system.

The framework the industry is building to is ISO's network architecture, called the Open Systems Interconnect (OSI) network model. ISO has designed the model with seven layers of protocols and specified the relationship between these layers.

For many layers, however, ISO has created several different options. The transport level, or Layer 4 of the OSI model, for example, includes four classes of protocols.

'Waiting for demand'

As a result, vendors can implement different options, rendering different implementations incompatible. The Manufacturing Automation Protocol (Map) promulgated by General Motors for factory automation specifies use of certain options available within each layer to obviate that concern. Map specifies a suite of ISO protocols, a protocol stack.

Ungermann-Bass, having sold its first products based on Map in April 1985, leads the personal computer and terminal network vendors in OSI product development. Few other local net vendors have taken as aggressive a stance as Ungermann-Bass. Most are waiting for greater market demand for OSI-compatible products.

Bridge Communications and Micom-Interlan plan to introduce OSI-compatible products before year end, and such companies as Excelan, Sytek and 3Com are looking to 1988 to unveil such products. Novell has just hired someone to focus on OSI but is making no commitment as to when the company might deliver products.

Ungermann-Bass, Bridge and Micom-Interlan say they are aiming to be leaders in OSI networking. Ungermann-Bass is now beta testing its Map 2.1 protocol suite on its Net/One local network, according to Joe Schoendorf, executive vice-president of Ungermann-Bass and president and chief executive officer of Industrial Networking Incorporated (INI). INI is jointly owned by Ungermann-Bass and General Electric Co.

Bridge plans to roll out its first OSI product during the northern autumn, said Judith Estrin, executive vice-president. The Top-compatible software product will run on servers and support all seven OSI layers.

Bridge has several years experience with OSI, and has been shipping an ISO protocol stack including Layers 1 to 4 to a customer in France, Estrin said.

Like Micom-Interlan, Excelan and Sytek, Bridge is looking to introduce OSI support through software upgrades, a capability made possible by the network model's layers. "Our game plan is not to have the customer change the network board," said Mike Barker, president of Micom-Interlan.

While Ungermann-Bass and Bridge have developed their own OSI implementations, Micom-Interlan purchased the protocols in the form of software from Retix.

Using Retix's source code, Micom-Interlan developed and is offering OSI transport-level protocols with an interface to Network Basic I/O System, said Ken Guy, vice-president of product strategy for Micom Systems. This interface means software applications that support Netbios will be able to run over networks using Micom-Interlan's transport protocols.

Micom-Interlan plans to bring out several more products that build on the OSI transport layer (Class 4) late this year, Guy said. One product will enable Unix System V Release 3-based systems to be used with a host of different networks, independent of underlying protocols. The company will support a similar capability for Berkeley Unix 4.2.

Micom-Interlan also plans to offer a transport layer interface to MS-Dos in the first quarter of 1988, enabling users of Unix and Dos machines to transfer files, as well as develop network applications that can access files at the record level, Guy said.

On a slightly different tack, Excelan and Sytek both want to support multiple protocols, such as Map and Top and de facto standards such as the Department of Defence's Transmission Control Protocol/Internet Protocol.

Sytek expects to support OSI protocols in software on communication servers and routers by 1988, said Phil Edholm, director of product marketing.

Rich Miskiman . . . Newbridge International marketing manager

Comdex comms showcase

(Continued from page 1)

- Multi-vendor integration — at present, vendors talk only to themselves, or to IBM.
- embracing of standards, and
- Peer-to-peer networking.

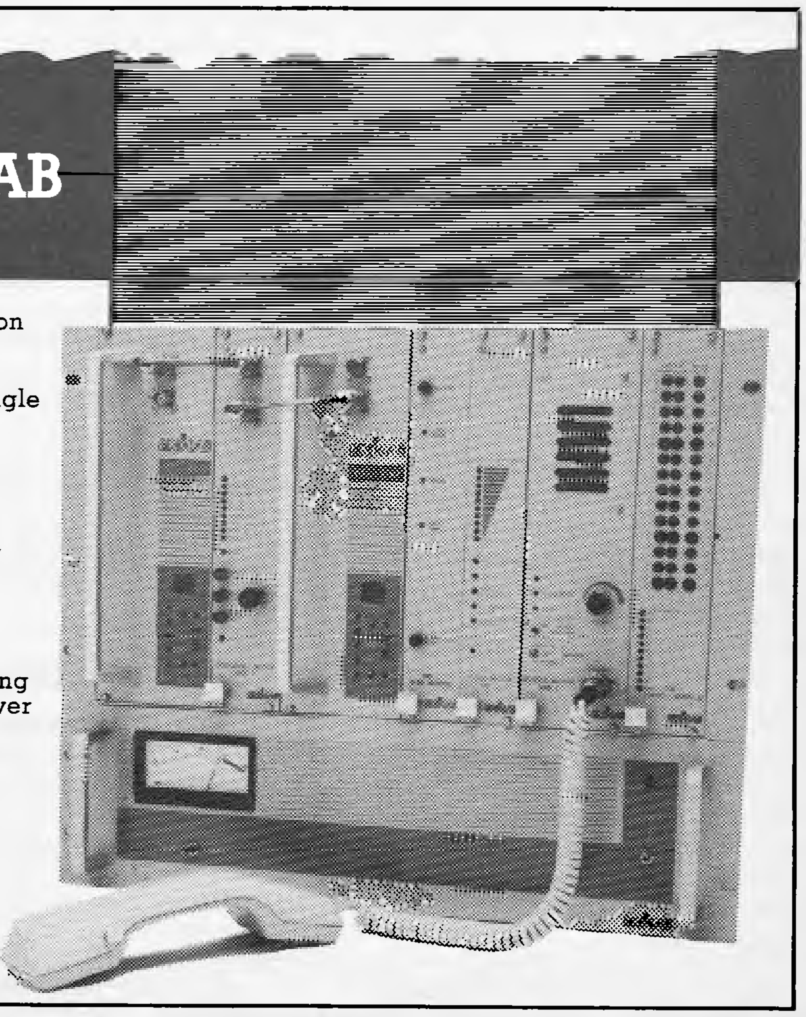
Free strongly emphasised the importance of network management in the multi-vendor network.

His address on what Comdex organisers billed as the "connectivity conundrum" set the scene for three days of discussion of connectivity in all its guises, from SNA and X.25 networks to Lans and the "Open" Mac.

There was even a session devoted to "Selling Connectivity Products and Services". The $A240 (or $A130/day) "connect time" cost should have been considered a worthwhile expense by most delegates.

The accompanying exhibition at the disaster-prone RAS Showground was a washout, at least on the first day, with persistent rain as much of a deterrent as the $A15 ticket price.

Most interesting new products: the Canadian Newbridge Networks Corp range of Mainstreet PC connectivity devices including a palm-size intelligent port switch run under RAM- resident software, a briefcase-size intelligent Megalink channel bank and a small rack-mounted modular Megalink bandwidth manager.



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Market 'healthy' — but beware of dangers

By Paula Musich

Healthy growth being reported in recent quarters by some local networking vendors should not lull users into thinking the market is rolling along nicely, thank you, and that all is well in local net land.

Market consolidation that began over a year ago is continuing, even as new companies enter the market with new and innovative, as well as me-too, products. Companies that take either approach — whether or not their products truly serve a need not addressed by others — sit in precarious positions. This is because of their late entry into the market.

More established vendors suffering growing pains may find it difficult, even impossible, to transcend those adolescent spasms. A market characterised by fast growth and little competition will tolerate mistakes more easily than a market marked by intense competition and slowing growth. The local networking market today is becoming less able to tolerate such mistakes.

Personal computer networking vendors state that personal computers are the workstation of choice, as if this were gospel. They gleefully point to all those unconnected personal computers in the market as wide open territory for their marketing efforts. (International Data Corp recently reported that only about 10 per cent of all business personal computers are connected via a local network.)

The truth is that a large number of those personal computers will never be connected because there is no need for it.

The lesson in all of this for users is not how to invest in high-tech companies, but how to invest in technology that you have to live with and support for years to come. Users need to look beyond the capabilities of a vendor's products and examine the company — how well it is run and how solid its footing is in the market.

It is not enough to ask what kind of support the company provides for its products; it is important to look for a real commitment to that support. This commitment can be gauged by the extent of the company's customer service organisation and the amount of resources the company puts behind the organisation.

The support track record for multivendor networks should also be investigated. If you want to exist in a multivendor environment. It is also important to closely scruitinise that company's commitment to standards. Even large, well-heeled companies entering new markets should be closely questions about their commitment to standards.

The decision to make major investments in networking products cannot be made in a vacuum, looking solely at the features and performance of the products themselves.

Switch aimed at branch offices

SAN JOSE, California — Seeking to capture the lowend of the packet-switching arena, Tymnet McDonnell Douglas Network Systems has announced a low-cost desktop packet switch aimed at large corporate office branches and small and medium-size companies.

The MD 7408 switch, which costs $USUS8000, signals a growing trend in the marketplace toward smaller packet switches, according to analysts. Limited delivery in January 1988 has been promised, with general availability by April 1988. No Australian release dates or prices have been set.

While not the least expensive product on the market, the switch is positioned with a "very reasonable" price tag, analysts argue, since it is packaged in the same unit with a packet assembler/disassembler (Pad). Many vendors, such as Micom Systems, and Telenet Communications typically sell their switches separately from their Pads.

The MD 7408 is considered the most significant offering in a battery of hardware enhancements and software announcements that Tymnet is set to release in mid- and late September at the Tele-Communications Association show held in San Diego, company officials said.

The PC-sized MD 7408 is equipped with eight ports and will cost between $US8,000 and $US15,000, depending on the user's configuration. Up until now, the smallest switch in the Tymnet Micro Engine product line has been the Model 4, a switch that supports 14 ports and is priced at more than $US15,000.

The MD 7408 will support popular protocols such as CCITT's X.25, Synchronous Data Link Control (SDLC) and bisynchronous and asynchronous communications simultaneously. Users reportedly can configure four of the eight ports to handle up to four links at speeds of 64K bit/sec. and 9.6K bit/sec.

The MD 7408 is claimed to be compatible with all of Tymnet's existing hardware, communications software and network management tools. It will also feature a battery backup that holds memory for up to 72 hours.

Airlines choose System One over American

MADRID — European airlines trying to build a continental reservations system have decided to buy software from Texas Air subsidiary System One Corp and $US100 million worth of equipment from IBM.

The Amadeus group, consisting of Air France, Scandinavian Airlines System, Lufthansa of Germany, and Iberia Air- lines, said System One will develop network applications under contract, and jointly market the software worldwide.

System One won the contract, valued at tens of millions of dollars, over American Airlines, which was bidding to provide its Sabre network software.

The contract also calls for a link between System One in the US, which serves 6500 travel agencies using 20,000 terminals, and Amadeus. With the link, an estimated 15,000 travel agents in the US, Europe, Africa, the Bahamas, the Caribbean and Central and South America will be able to access System One or Amadeus to make airline, car rental, hotel and rail reservations.

The agreement is a blow to American Airlines, which has been marketing its Sabre network to European travel agents. Analysts says Amadeus was put off by American's insistence that it be offered part ownership of the group, even though Sabre is purported to be technically superior to System One.

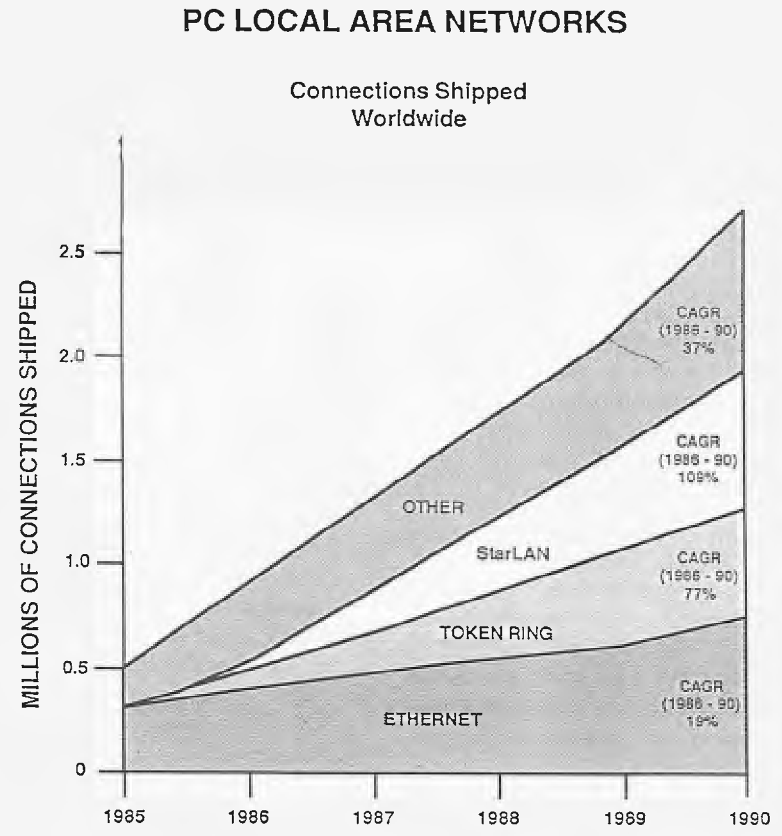
The Amadeus group will compete against another European airline group that includes United Airlines Covia Corp, operator of the Apollo network, as well as British Airways, KLM Royal Dutch Airlines and Swissair. That group has an edge on the Amadeus group, analysts say, as it already uses IBM gear.

Amadeus carriers will have to swap out Unisys Corp equipment for IBM hardware, a procedure that could slow development of the network.

Aussat agreement

WELLINGTON — Aussat and the NZ Telecom Corporation have signed a memorandum of understanding on the corporation's use of up to four transponders on each of Aussat's two B series satellites.

New Zealand has already contracted to use one 30W transponder and part of the capacity of a 12W transponder on Aussat 3, due to be launched in September, with a spot beam covering the South West Pacific.



Source: Forrester, WD, Bain, A.D. Little

STARLAN is the "white knight" of PC networking, according to one vendor of the twisted-pair technology who produced this chart outlining a projected growth rate that shows Starlan connections doubling each year during the remainder of the decade. Token Ring, another rising force, will also do exceedingly well with a compound annual growth rate of 77 per cent — much of it at the expense of established Lan pioneer Ethernet. "Other" technologies are tipped to show a CAGR of 37 per cent, according to the projections prepared by Western Digital from figures by Forrester Research, Bain and A D Little.

Telecom to make 200,000 phone calls

MELBOURNE — Researchers paid by Telecom will ring 200,000 telephone users — both private and small business — over the next 12 months to check on customer satisfaction or otherwise with our common carrier. Studies of big user attitudes will also be made.

The phone poll, conducted by Reark Research, is to give Telecom feedback on telephone orders, installations, faults and maintenance as well as on operator-assisted services so that corrective action can be taken.

The survey — dubbed Telcats, for Telecom Customer Attitudes to Service — is modelled on similar studies in the UK and the US and has been field-trialled in Western Australia before its nation-wide launch.

Telecom staff in all 78 Telecom districts will identify customers who have made contact with the commission in any one week, giving Reark researchers a random sample from these the following week.

Survey responses will be entered directly into online minicomputers and data results for each of the customer services monitored will be reported to Telecom managers at all levels.

The commission will use this feedback to try to keep customer satisfaction at between 90 and 95 per cent. The survey will be an ongoing exercise. Studies on STD and billing issues will follow later.

Telecom's Telcats manager, Len Budge, said there will be separate surveys of larger business customers.

"These customers use much more complex products and services, and do not lend themselves to the mass survey approach . . . (therefore) the surveys of larger business customers will be specially designed," he said.

network news

ARMONK, New York — IBM has fired the first shots in its defence of the new PS/2 line, filing trademark lawsuits in federal courts in California against makers of add-on boards. IBM charges in the suits that AST Research Inc and Orchid Technology violated the PS/2's trademark.

Specifically, IBM charges that AST violated the trademark by using the /2 suffix in its Rampage/2 and Advantage/2 products and by using advertising headlined "PS/2 Memory. Our Name Says it All." IBM alleges trademark violation in an Orchid ad with the headline "Introducing PS/2 Memory Expansion for People Who Think Big." Both suits ask for unspecified damages and injunctions against the defendants. Clone-makers claim the suits are an effort at intimidation by IBM.

MOUNTAIN VIEW, California — Novell CXI data communications division has introduced a micro-to-mainframe communications board for the IBM Personal System/2 Models 50 and higher. The PCOX/COAX-P coaxial board works with the PS/2 Micro Channel architecture bus and provides mainframe connectivity for individual PS/2s as well as for those running on Novell Netware local-area networks. The board is compatible with existing coaxial versions of CXI's PCOX software as well as software that runs on IBM's 3278/9 advanced emulator adapter. The board will be available in October for $US545.

TORRANCE, California — Ashton-Tate and Wang Laboratories have announced the availability of Framework II for Wang's Professional Computer and Advanced Professional Computer. The Wang version of Ashton-Tate's multifunction software operates on any Wang PC equipped with the vendor's IBM PC emulation option board and enables users to exchange files between Wang word processing systems and Framework II. The package sells for $US695.

SANTA CLARA, California — 3Com Corp has licensed the US and foreign patents for token ring technology held by Willemijn Holding BV, allowing 3Com to produce, market and distribute token ring products without restriction. The licence agreement applies retroactively to 3Com's existing products based on the IEEE 802.5 Token Ring standard. Under terms of the agreement, 3Com will pay Willemijn a royalty for all token ring products purchased by 3Com customers. The agreement remains in effect for the life of the patents. According to Olof Soderblom, inventor of token ring technology "the formal agreement … gives 3Com a tremendous advantage in the token ring marketplace. While the IBM licence agreement restricts IBM to the use of its token ring products in IBM machines, the terms of the 3Com licence permit dealers and customers to use 3Com token ring in both IBM and non-IBM environments."

BOSTON — IBM plans to announce in 1988 a Cmos machine that will help fill out its mid-range line. But IBM will have real problems selling the machine if it can't provide a smooth upgrade from current mid-range 9370 installations. According to IDC, the machine will be announced in late 1988 and will be based on an 8 million instructions per second (Mips) to 10 Mips uniprocessor extending to 25 to 30 Mips. Providing for upgradability on the 9370 line would help strengthen IBM's position against DEC by providing potential users with the peace-of-mind that DEC's product line clustering strategy has given them. It would also give IBM a much more seamless path from high-end to low-end, assuming that the upcoming Silverlake 3X replacement, also due in 1988, has some upgradability with the 9370.

200 devices on network

SUNNYVALE, California — Lockheed Missiles & Space Co has unveiled its Automated Centre for Electronics (ACE), a $US41 million manufacturing site that integrates more than 200 computerised devices under one baseband Ethernet network.

The company chose not to use the much-touted Manufacturing Automation Protocol (Map) for its networking standard. Bob Fitzpatrick, chief systems engineer for ACE, said the company preferred to remain with Ethernet since Lockheed was already using Decnet, Digital Equipment Corp's version of Ethernet, in the engineering group.

"By the time we started working out the details for the facility, Map was not fully mature. We already had an installed Ethernet and it wouldn't make sense to change," Fitzpatrick said.

Analysts agreed that this practical approach may also be the most prosperous for Lockheed. Too many companies were concerned with using the latest and most popular technologies before planning exactly what they want to accomplish, they argued.

The issue of Map vs Decnet has been a topic of contention for the past several months, with DEC President Ken Olsen publicly deriding users groups' efforts to set standards and the decision by Map proponents not to consider Decnet's medium as an alternative to Map-endorsed broadband.

Map enthusiasts, led by DEC customer General Motors, have long argued that Ethernet is prone to signal interference, that the contention-based access scheme will bog down the network as traffic increases since data collisions will increase, and that baseband networks are less flexible for long distances and cannot support a mixture of voice, data and video, for example. But Lockheed's Fitzpatrick maintained that his team of specialists has already tackled those issues.

Heavy, shielded baseband cable has been installed in the noisiest areas of the site. To lessen the volume of data collision on the network, engineers have worked with DEC to partition the network into subnetworks, he said.

IBM move on SNA may limit MIS managers

By Elisabeth Horwitt

FRAMINGHAM, Mass — IBM's accelerated drive toward a fully functional distributed Systems Network Architecture communications system is likely to limit MIS managers' choice of SNA front-end processor vendors, but broaden the choice of third-party SNA software retailers.

Companies like Communications Solutions and Cincom Systems have already started bringing out new SNA connectivity tools and applications designed to ease users' passage to the new environment.

However, several third-party communications processor vendors appear to be having trouble keeping up with IBM's rapid stream of updates to its front-end processor architecture while maintaining their products' added value.

This has discouraged some MIS managers from looking outside the IBM domain for their communications hardware.

Support for IBM's Network Control Program is one stumbling block. "We've looked at the possibility of buying our front-end processors from NCR Comten, but they don't maintain current NCP support," said one bank's network support manager.

Two such capabilities recently promised by IBM are dynamic reconfiguration and front-end processor support of IBM's PU2.1 peer-to-peer communications. "This will mean major functionality that people like NCR Comten have got to get for their own products," according to David Passmore, a researcher for Network Strategies.

"NCR Comten has to come up with IBM's functions and features plus its own value added," he said. "That's a dangerous game, because if it gets ahead of IBM, it will have to backtrack when IBM introduces similar capabilities."

Sperry Corp and Control Data Corp, which recently entered the SNA communications processor market, are also playing catch-up with IBM's NCP enhancements, he said.

Amdahl Corp, whose frontend processors were designed to run IBM software unchanged, does not have the problem of keeping up with IBM's latest NCP features.

However, IBM has made it difficult for Amdahl to copy its highend frontend processor, the 3725, by changing the microcode three times.

Communications processor vendors like NCR Comten and Netlink can offer greater networking flexibility and multivendor support than IBM because they are less firmly tied to the vendor's host environment. However, IBM's recent introductions threaten to eliminate some of those advantages.

Netlink spokesman Richard Buckle, who moved to the US recently from the Sydney sister company Systems Technology, said: "What really affects us is the PU2.1 support on IBM's frontend processor, which will allow multiple (IBM) System/36s and their resources to talk to each other across an SNA network."

Richard Buckle … "what really affects us is the PU2.1 support on IBM's front-end processor".

This capability, which Netlink now offers, will not be available from IBM until a new NCP version arrives sometime late in 1988, he says.

NCR Comten feels "hobbled by our need to conform to IBM's current NCP," said Eric Birkeland, the company's director of product marketing. "Users have demanded dynamic reconfiguration from us, just as they have from IBM," but NCR Comten, like IBM, will not be able to offer this capability until the new NCP comes along. "Changing to a new NCP will be difficult for us and IBM."

Comsat's big loss

WASHINGTON, DC — US "carriers' carrier" Communications Satellite Corp (Comsat) has posted an $US84 million second-quarter loss, and said it will sell off its remaining microwave, mobile and TDMA lines as unprofitable. President and chief operating officer Marcel Joseph will resign.

Comsat recently sold two other unprofitable nonregulated businesses, Comsat International Communications' International private network operations and the Vsat operations, to Contel Corp as part of a settlement of the two companies' aborted merger.

Comsat intends to pare its operations to its regulated international satellite business and its government systems and video entertainment lines.

Meanwhile Comsat's international satellite transmission business has received "overwhelming response" for long-term leases of its satellite voice circuits, the spokesman said.

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Planning must be 'intelligent' too!

THE concept of the "intelligent building" is slowly gaining currency in Australia. Wiring a building for communications is never easy, but it's better done as it goes up rather than chiselling chases and pulling wire later.

Once that decision has been made, there's another choice that must be made, that of the medium and perhaps topology to be deployed. It pays to do your sums carefully here, weighing up technological risk you're prepared to accept — and deal with yourself — and the price premium you pay for a "guaranteed safe" solution.

The difference can amount to orders of magnitudes: according to someone who knows this stuff (because his company did both projects) wiring Cray Research for advanced comms cost $US200 per connection. American Express opted for a system that cost $US2600 per connection.

There is another factor in the equation: local area network makers often forget that Lans are intended for *local* work groups. They like to tender for 1000-node networks when you should be using smaller networks and tying them together as "domains of interest", counsels Dr Kenneth Thurber, president of ACT, a US consulting company.

"Backbone" rings using different technologies can be employed, such as broadband or Ethernet. Ethernet often "sneaks" into building via DEC's Vaxes, whereas the proponents of the "one-size-fits-all" philosophy use the Trojan horse approach of offering broadband-based building management and security thrown in for good measure . . .

Whatever *you* plan for, consider this: Lans are extremely vulnerable from a security point of views. According to Thurber, data monitors can be used to "see" all your passwords. And when satellite communications are tapped, entire wide-area networks (Wans) can become exposed to security breaches.

Intelligent buildings — the 'cathedrals' of the space age

By Ellen Staelin

THE WAY a person describes his or her work depends on that person's point of view. During the Middle Ages a bystander once asked two stonemasons what they were doing. The first answered, "I am laying stones. Can't you see that?" The second stonemason, though, answered, "I am building a cathedral."

The excitement in building or planning an intelligent building requires vision like the second workman's. The primary characteristic of intelligent buildings is a communication network which integrates telecommunications, datacommunications and building automation.

The basic ingredients are wires and communication equipment. But the excitement in intelligent buildings comes from the services that are and will be delivered on those networks. Intelligent buildings are to end-users what ISDN networks are to telecommunications vendors — a foundation for the Information Age.

The potential benefits of intelligent buildings are:

- Reduced costs for long-distance telephone calls through the use of bypass technologies.
- Reduced wiring costs, both in installation and maintenance, by using one wiring system instead of three.
- Increased flexibility in positioning computer terminals and peripherals, telephones and building monitors.
- Increased functionality within each system (telecommunications, data communications and building automation), because each system is supported by a more comprehensive wiring system than any individual system could justify.

At the moment, there is little synergy between or among the systems because voice-controlled applications have scarcely emerged. However, a network that manages both voice and data will be able to handle voice applications when they do emerge — applications like annotating text.

An organisation should consider the potential benefits of intelligent buildings whenever they build, renovate or lease space. Because buildings have a much longer life than the three subsystems that make it intelligent, (telecommunications, data communications and building automation), organisations should try to anticipate the future requirements of these subsystems whenever they build or renovate space. The building should either provide excess capacity initially or have provisions for expanding as necessary.

Organisations leasing space can evaluate buildings by the services they offer. Some buildings offer shared tenant services (STS) whereby a builder or the builder's agent offers the services characteristic of intelligent buildings to the tenants. By sharing the expense among many tenants, services are feasible which no tenant could afford alone.

A number of services are already available on voice/data networks, such as: telephone services, voice mail, electronic mail facsimile, access to online databases, videotex, word processing or other office automation software, personal computing.

Buildings equipped with telephone switching gear can take advantage of bypass technology as well and offer wide area networks, direct links to long distance lines, and satelite communications.

Many services will become available through public networks once ISDN is implemented in the US. Pacific Bell recently announced a trial installation of voice/data cables to homes and shopping plazas. Thirty vendors have tentatively agreed to offer services on those lines — services like home banking, medical monitoring, home meter reading, electronic entertainment guides, debit card terminals, pay-per-view television, airline ticket sales, and car rental reservations. This sampling of services stimulates the imagination to envison the range of services that might be offered to businesses.

In general, intelligent buildings are wired with Lans to service work groups on each floor — usually a baseband Lan using twisted pair cable. Individual computer systems, peripherals and monitors for the building are attached to the Lans. The Lans in turn are connected to a vertical spine, a broadband Lan of coaxial cable or fibre optic cable, which feeds three systems:

1. A computer that controls the building automation systems.
2. A controller room where all the intelligent systems are monitored and controlled.
3. Telephone switching gear which may be an on-site PBX (private branch exchange), on a shared tenant switch.

Organisations can lease space in buildings that offer shared tenant services. The number of such buildings in Australia is not known, but is certainly miniscule. In the US more than 250 such buildings have been built, and some developers offer services directly.

Alternatively, organisations can build intelligent buildings or renovate facilities in existing buildings.

- *Ellen Staelin is senior consultant with IDC's technology future service program.*

Sceptics may be proved wrong

By Paula Musich

SCEPTICS who assert that 10M-bit/sec Ethernet data signals cannot be run reliably over telephone-type wire may soon have a lot in common with the Flat Earth Society, if a number of Ethernet vendors and the US Institute of Electrical and Electronics Engineers have their way.

Six months ago, members of the IEEE 802.3 Starlan task force said that 1M-bit/sec was the fastest practical data rate for running data signals over nonshielded twisted-pair wire.

Despite that, the IEEE 802.3 committee established a study group to consider a standard based on such a capability. The group was holding its first meeting late in August.

A growing number of computer and communications vendors are already pursuing the technology. Synoptics Communications (see story on New Products page) and 3Com, which publicly announced their intentions to offer Ethernet twisted-pair products by late (northern) summer, have been joined by Micom-Interlan, which has established a technology transfer agreement with Synoptics, and Ungermann-Bass, which is actively pursuing the technology. Hewlett-Packard, which proposed that the IEEE form the study group, is also working on an Ethernet-over-telephone-type-wire product.

Micom-Interlan, Ungermann-Bass and HP are all expected to have products ready for commercial use by the end of the year. Others rumored to be looking at such an option include Digital Equipment Corp, Sytek, Convergent Technologies and Novell. Although he was reluctant to name specific companies, Robert Campbell, chairman of the Starlan task force, said that all of the larger vendors were pursuing such an option.

The movement is prompted by vendors' belief that customers want to re-use wire. "Driving the demand is the fact that the wire is there already," said Andrew Ludwig, president of Synoptics. "There's a real appeal in eliminating the requirement for installing a new cabling system. Twisted pair is also more flexible: It can be used for voice and data."

Within the past year, users have come to expect to be able to use telephone-type wire for more than one function, according to HP's Information Networks Group. "Customers have been educated to put wire in for multiple uses, rather than just one use," a spokesman said.

Both companies, formerly among the ranks of the sceptics, have developed the technology to overcome the physical limitations of nonshielded twisted-pair wire. These problems are primarily that of cross-talk and radiation, which are magnified when running high-frequency data signals at faster data rates and longer distances.

"A lot of specialists said it was an impossibility: The problems of radiation and cross talk couldn't be overcome," the HP spokesman said. "The twisted pair is a giant antenna, and if there is no shielding, you will disturb other signals in the area around it. The other problem is that pairs are typically bundled together in 25-or 50-pair bundles, and you have other things going on in the bundles, especially telephone traffic, which is very unfriendly from an electronics point of view because it uses very high voltages."

> *‘A lot of specialists said it was an impossibility: the problems of radiation and cross talk couldn't be overcome’*

Eight sites in beta trial

By Patricia Keefe

SYNOPTICS Communications has become the first vendor to offer 10M-bit Ethernet over unshielded twisted-pair cabling, with AT&T certifying Synoptics Lattisnet for operation over its Premises Distribution System (PDS) cabling system.

Unshielded Twisted Pair Lattisnet, available now, is the result of a joint effort initiated between AT&T and Synoptics in January.

The resulting technology reportedly allows companies to instal a single local-area network cabling system using standard telephone wire to support high-speed Ethernet over three major premises cabling systems: fibre optics; the IBM Cabling System, which is a shielded twisted-pair option and AT&T's PDS, the unshielded twisted-pair.

The latest Lattisnet offering has been in operation for two months at eight beta-test sites, operating reliably within the Ansi and IEEE 802.3 Ethernet specification, Synoptics claimed.

It uses a star topology and allows up to 100m of horizontal telephone cable between the wiring centre and the work area. Both the transceiver and the host module in the concentrator use standard four-position modular jacks. The concentrators are located in wiring closets and connected by a fibre-optic backbone.

Consisting of Model 405 host modules and Model 505 transceivers, Unshielded Twisted Pair Lattisnet costs approximately $US500 a node.

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Fibre optics make inroads into the cabling market

Fibre optical cable is making inroads into the building cabling area, against established wire-based technologies and broadband alternatives. John Wise explains the reasons and details some examples.

THERE are many areas where optical fibre proves an economical alternative to copper in the communications network of a single organisation.

The straightforward replacement of an existing or future mass of cabling (e.g. that due to RS232 terminals being scattered around a building to a mainframe in the basement) with small fibre optic cables and multiplexers (some of which can transmit over 100 channels over a fibre cable 3mm × 6mm in size). This can make sense because the added cost of the multiplexers is paid for several times over in the savings in the installation, if a new building, or the savings possible by not having to refurbish an older congested building.

In a similiar situation it is often cost effective to instal a local area network which provides totally flexible interconnectivity with very often an extraordinary saving in cabling. Usually, such Lans employ coaxial cable technology; however, fibre optics is now starting to penetrate this area.

Also communications security — which has been of critical concern to defence-oriented organisations for many years — is now becoming an important issue to commercial groups as well. While this encompasses many aspects, secure communication links is one of the most important: fibre offers enormous technical and cost benefits over conventional media in this area.

Other technical problems that can bedevil a copper system, for example ground potential differences, nearby radar, microwave or television signals, heavy electric motors or electrical distribution systems, cease to exist when fibre is used. Thus, fibre optics is often a very cost-effective solution to intra and inter building communications now.

In future, fibre will become even more attractive because the proliferation of intelligent workstations, terminals and mass storage systems supporting heavily memory dependent software has resulted in an extraordinary increase in the volume of data transfers.

Many local area networks under development operate at very high speeds (100-200M-bit/sec) and are, therefore, often designed with fibre as the primary transmission medium. Examples of this are the IEEE 802.6 Man (Metropolitan Area Network) draft standard and the Ansi X3T9.5 FDDI (Fibre Distributed Data Interface). These operate at 50M-bit/sec and 100M-bit/sec respectively and utilise counter rotating rings with extensive facilities for reconfiguration in the event of system faults.

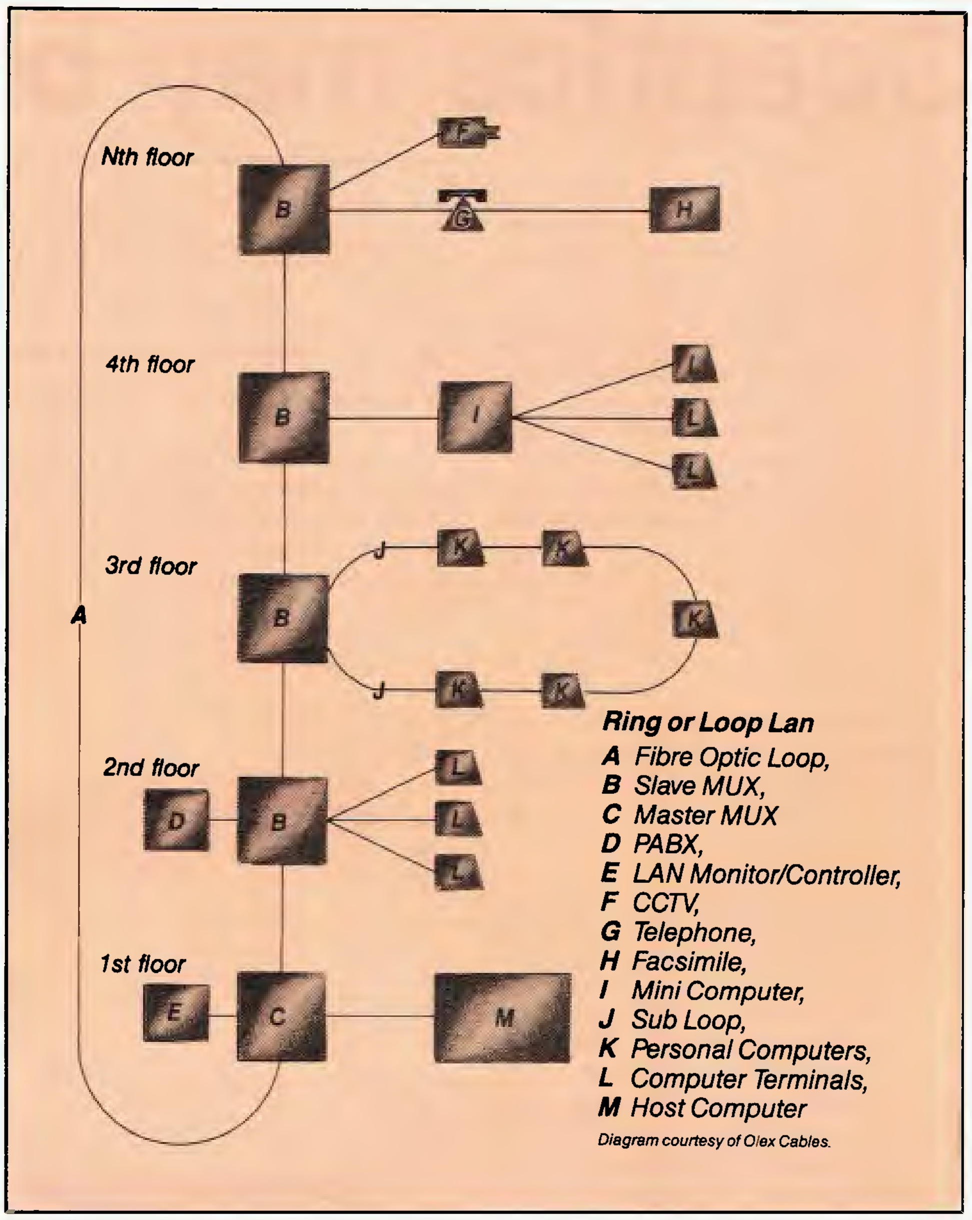
It is for these reasons than many developers are now incorporating fibre optics into new buildings. Sometimes fibre is put in purely as a communications spine up the building for future use only, other times fibre provides comprehensive internal services, communications medium, fibre control and security as well as the usual range of computers, terminals and workstations.

An example of the latter is Lend Lease Corp's installation of a large fibre optic Ethernet Lan at its Australia Square complex in Sydney. Two buildings are involved with a central star coupler in each building interconnecting several fibre optic transceivers. Terminal servers expand the network to the point that approximately 200 terminals are now connected.

This Lan has been operating very well for more than a year and has provided Lend Lease with valuable experience in various aspects of fibre networks such as system design and cable installation, termination and testing. Lend Lease sees fibre now as another viable alternative for its future projects.

As an example of the speed at which fibre systems pricing is dropping, it is interesting to note that medium performance Ethernet transceivers, which sold for several thousand dollars a few years ago are now available for about $A1000. While this is still somewhat higher than the $A300 to $A500 for a conventional Ethernet transceiver, the price difference can often be made up by the simplicity of installation of fibre cables.

(Continued page 15)



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Tandem offers workstations

By Mark Stephens

CUPERTINO, California — Entering the PC marketplace for the first time, mainframe manufacturer Tandem Computers has announced seven MS-Dos workstations that offer builtin 3270 emulation and can also operate as terminals for the company's Nonstop and LXN fault-tolerant computer systems.

The new PCs come with 1M-byte of Ram and AT-style keyboards with dedicated Tandem function keys. They also share a common eight-slot chassis measuring 38cm by 40cm by 15cm. The modular design of the systems should make it possible to upgrade them easily at any time by changing processors, memory, peripherals, or storage, according to Tandem.

Tandem said its highend 80386-based PSX/300 series will be available in January. The $US5695 PSX/370 has a 70M-byte hard disk, and the $US4895 PSX/340 has a 40M-byte hard disk. Both models use 16MHz processors, and each also comes with a 1.2M-byte 5in floppy disk drive.

Five models in the PSX/200 series are built around the 80286, including the diskless 8MHz PSX/200 ($US1195) and the single-floppy PSX/201 ($US1395).

Both are intended to operate in a Lan environment or as terminals. The similar PSX/220 ($US2995) and PSX/240 ($US3795) offer 20M-byte and 40M-byte hard disks and 12.5-MHz processors. The PSX/220E ($US2395) is an 8-MHz version of the PSX/220. Tandem said the PSX/200, PSX/201, and PSX/220E will be ready in October, with the PSX/220 and PSX/240 coming out in December.

The PSX/220, 240, 340, and 370 all come equipped with EGA graphics capabilities now, and Tandem said it will offer VGA graphics on them in January.

Monitors are not included in system prices, but Tandem said a $US225 monochrome monitor and a $US775 high-resolution color monitor are available. A $US775 VGA-compatible analogue color monitor will be available in January.

A Tandem terminal . . . now the company is entering the PC market

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Fibre optics: often better than copper

(Continued from page 14)

Fibre is often cost competitive with copper purely on the basis of the cost of electronics and cable. When other factors such as fibre's intrinsic safety, noise immunity, security, light weight and small size are considered, a fibre solution is often the most economic one.

With the introduction of more powerful terminals accessing enormous memory spaces has come the need for high transmission speeds. Over the next five years, fibre systems will become another conventional technology for building communications. To take advantage of its technical and economic benefits, system designers and users should start examining it as a very practical, available technology.

Are there disadvantages to this technology? Certainly, there are some areas where fibre has a problem competing with copper systems:

- Broadband transmission: fibre is not well suited to multichannel analogue transmission systems mainly because of limitations in the output power and linearity of available optical sources such as light emitting diodes and lasers;
- Local area networks configured in a bus structure: once again source power limitations limit the number of optical taps that can be placed in series on a linear optical distribtuion bus. This limitation is, however, surmountable, typically by star network topologies or by active optical taps;
- Straightforward point to point replacement of twisted pairs over short distances: it is hard to beat a twisted pair for cost when transmitting low data rates (9.6K-bits/sec RS232) over short distances (less than 50 metres).

Diskless PCs: far from

By Bruce Rash

From the outside, dumb terminals, standard PCs and diskless PCs look pretty much alike. But managers who look into buying them will discover a world of difference beneath the surface, especially in price and function.

When there was only one way to access an agency's computer system, hardware choices were easier than they are today. Now an information resources manager faces several data access solutions. There is a natural tendency to want the newest technology, but the newest may not be the best choice.

Not long ago, access to a computer system was limited to dedicated terminals physically wired to a mainframe. When personal computers came along, they provided great increases in the processing capacity available to the individual, but they required some way to get information to and from the mainframe. Now local-area networks are making their appearance, bringing with them a new set of access concerns.

> *‘Dealers of diskless PCs report growing interest in these devices among government users’*

To some extent, the method of communicating with the mainframe dictates the type of device used to access it. For example, if you are communicating through terminal wiring, you can use terminals. If your central computer is available through a Lan, on the other hand, a diskless PC might answer your needs. If you want a single solution, a personal computer configured with the proper software and communications hardware will do either job.

Terminals have the advantage of being relatively cheap and simple. Also connecting them to a computer is straightforward because they are usually designed to work with a specific computer. For this reason, standard dumb terminals are quite common and are purchased with most mainframe or minicomputer installations.

These terminals are called dumb because they do little beyond providing access to a minicomputer or a mainframe. Usually, all they can do is receive information from the central computer and display it. They provide a keyboard that permits information to be sent to the computer. Sometimes, this is all that is wanted, so it makes little sense to spend more money to add extra capacity.

There are also instances where personal computers don't work well. Because of their mechanical complexity, PCs do not lend themselves to operation in adverse environments.

In addition, dumb terminals are far less tempting as targets for pilferage because they cannot do anything by themsleves. They are an obvious choice where physical security is less than ideal. In some applications, a terminal is the only workable choice.

Personal computers provide an alternative to dumb terminals for communicating with the mainframe. They can emulate the terminals while providing additional capabilities.

Most terminal emulation requires only software. In a few cases, such as IBM 3270 terminal emulation, some additional hardware is required as well.

Because they perform their own processing, PCs free the mainframe from addressing tasks that can be handled at the PC level. They also reduce the load on the communications system because only a minimal amount of information needs to be sent back and forth from a PC to the mainframe.

However, the extra capability comes at a cost, expecially in the retail marketplace. Because the PC does more and is more complex than a dumb terminal, it can also cost more. Only the government's huge purchasing power gives agencies some leverage on pricing.

Zenith Data Systems Z-248, an IBM PC/AT compatible, can emulate a variety of terminals, yet costs only $US1103 in its most basic form. The machine is not yet available in Australia.

This is actually less than some computer manufacturers charge for dumb terminals. Zenith's price is so low that even a diskless PC sometimes costs more than the Zenith Z-248 with disk drives when it is configured for network operations.

Personal computers can connect to a central computer through the same wiring dumb terminals use or they can use a Lan. While a Lan requires additional hardware, it adds flexibility to the system because it permits much faster communications. For this reason, users may want to have their PCs use disks on the network for data storage instead of an internal disk drive.

The central disk in a Lan is controlled by a file server. This is usually a computer with a large disk drive containing data and programs for the use of the entire network. A PC attached to the Lan can use the file server's disk as if it were one of its own. It can, in fact, do without a disk of its own at all, using the file server's disk for all operations.

Personal computers without disks of

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powerless

their own are called, not surprisingly, diskless PCs. These machines will work only in conjunction with a Lan. When turned on, they load their operating system from the Lan's file server, and all the files they create and the information they use comes from the Lan.

Because they include no disk drives or drive controlling electronics, diskless PCs are less expensive than regular PCs. In addition, they have important security benefits because users can't remove data or software from the network. Only the operator of the file server can do this.

Dealers of diskless PCs report growing interest in these diskless devices in the US government, especially in agencies such as the Defence Intelligence Agency where security concerns are high.

To date, however, there have been few diskless PC buys — partly because they are relatively new on the market, partly because of price.

According to one dealer representative, "It's tough to compete with Zenith when they're almost giving away PCs." Not all dealers are stumped by price, however.

A diskless PC from Novell called a PC Workstation costs less than $A1808. Their device is essentially a standard PC with a network adapter but no disks.

Novell's version will allow disks to be added later. Others, including those produced by Televideo, preclude that arrangement.

While diskless PCs do enhance system security, they extract a price in flexibility. The diskless PC can't run if its network is inoperative. Likewise, all the signals that would normally go to a computer's disk drive go instead over the network, which adds to the load on the network and tends to slow it down.

Some vendors emphasise the control given to the network manager. Because users can perform only tasks the network allows, they cannot corrupt data or copy software. In addition, only the network manager can control the manner in which the system is used.

> *PCs provide an excellent combination of performance and low price*

Personal computers ae slowly taking over jobs usually done by dumb terminals, and they are also becoming the primary workstations on Lans. The reason for this is flexibility. They are not limited to acting as a communications device, and they can work independently.

Dumb terminals and diskless PCs lack this flexibility. A terminal can only communicate with its host computer. A diskless PC depends on its network to function and can do nothing without it.

Flexibility is equally important to the personal computer in its role as a terminal. There are a variety of terminal-emulation programs available that let PCs act as any one of several terminals.

PCs can fill the role of a multifunctional terminal when this terminal must communicate with diverse and incompatible mainframes and minicomputers during the course of the day.

Here, the combination of a microcomputer and the proper software seems to be the best bet.

Security is a problem with personal computers. These machines contain the means of duplicating information for anyone who can get to the machine. Worse yet, they are small and portable enough that the computer — and the data it contains — can simply be carried off. Finally, they are vulnerable to vandalism and the destruction of data because nearly anyone can erase information in seconds.

These threats are being addressed in a number of ways — from locking up the

(Continued page 18)

*HP-UX B. 1 and 5.2 HP's implementation of AT&T's UNIX System V Release 2.0 running on the Model 840 and the Series 300 respectively, have been tested and using the AT&T System V Verification Suite and conform to the Base System (Model 840) and the Base System plus Kernel Extensions (Series 300) as specified in Issue 2 of the AT&T System V Interface Definition.

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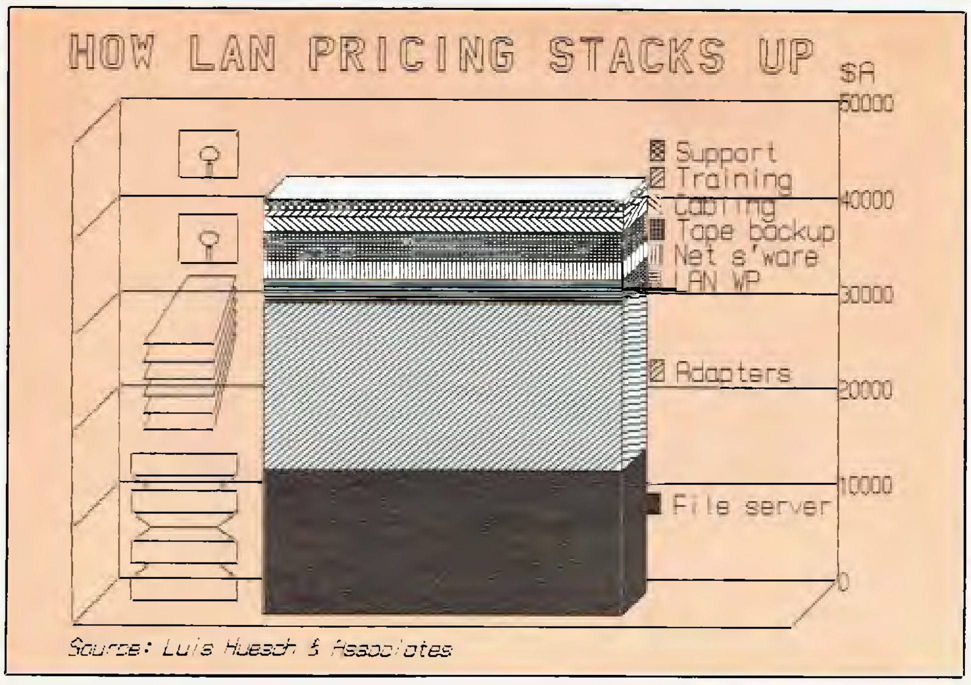

Source: Luis Huesch & Associates

Pros and cons of PCs, terminals

(Continued from page 17)

computer to using only removable disks, such as floppy disks and removable hard disks that can be locked up at the end of the day. Many organizations keep their PCs behind locked doors, while others prohibit the use of sensitive information on them.

Security is one of the chief factors behind the interest in diskless PCs. These machines combine many of the advantages of personal computers, including the ability to use popular software. Because their data is stored on a central disk controlled by a network administrator, their control over the data is limited. This prevents copying and reduces the chance of vandalism significantly.

Terminals are as secure as diskless PCs because they can do only what the computer to which they are attached lets them do. If the mainframe's security system is designed properly, their risk is quite low. In addition, there is no risk of unauthorised copying of data by a remote user. Because the computer is normally housed in a computer centre with constant supervision and with physical security in place, the risk of data theft from the terminals is also minimal.

To some extent, choosing a means of access is determined by more than mere technical consideration. Some permanent users have strong financial inducements to procure PCs for most uses. The price is simply so low that it is difficult to justify anything else.

Under these circumstances, using a diskless PC on the Lan is a sensible alternative. It provides many of the same capabilities as a standard PC, while costing much less. In addition, some of the diskless PCs, including the Novell unit, can be converted to standard PCs simply by adding disks.

> *A diskless PC presumes the existence of a Lan. If one does not exist it must be installed — which can be fairly expensive*

A diskless PC presumes the existence of a Lan, however. If one does not exist, it must either be installed, or these machines cannot be used. The supporting hardware for a Lan is fairly expensive, and the cost and delay of installing the required cable can be substantial.

The disadvantages of terminals and diskless PCs stem from their inability to operate without their central systems. If the mainframe goes down or the file server is turned off, they can do nothing at all. In these circumstances, a personal computer is virtually unaffected and can perform its local function regardless of the state of the network or the mainframe.

Equally important from the user's standpoint is the ability to manipulate data as needed and when required. If you want to change the way information is processed, you do not need to request a programming change and wait for months; you only need to change a few cells on a spreadsheet.

In short, PCs provide an excellent combination of performance and low price, but there are risks associated with putting this power in the hand of every user. If the risks are the controlling factor, then they must be balanced against the loss of flexibility in deciding between dumb terminals and diskless PCs.

- *Bruce Rash is a consultant and freelance writer.*

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PM CW MS

PC users extending power push

By Colin Brammall

CANBERRA — The world is starting to see a significant percentage of personal-computer workstations being connected via local-area networks rather than through processors because users are extending their power upwards, according to visiting US analyst Amy Wohl.

Wohl, in Australia to take part in Comdex, told a group of Commonwealth public service DP managers that when users do that, they tend to look for solutions that are incrementally not much more expensive than what they've already got and for which they can manage technology support themselves.

"Since buying a processor and attaching your workstations to it looks more expensive and harder to do, very often they get started out with Lan solutions. In the US you can buy a Lan environment for five workstations with a server for less than $US10,000," she said. Taking currency differences and other costs into account, that would translate into approximately $A20,000 in Australia.

"On average in 1986, a Lan had five workstations on it. We expect that, on average in 1987, a Lan will have eight workstations. So these are very small environments and they have problems. . .while each one of them may make economic sense, when you look down from the point of view of the organisation, and look at what it cost you to implement all of them together and, more importantly, what it's going to cost you to hook them all up to each other or to a central computing environment (all the gateways you're going to need, for instance) it may turn out that you've made some very expensive. . .investments.

"Also, typically, these small Lan environments which can be installed by the users on their own do not scale up to large-scale organisational environments. If you buy a Lan that's suitable for 10 workstations and install it at five, when you need 15 or 50 it's not likely that you can use the same equipment."

Wohl also spoke of some "future technologies".

"If I need to get data from three different corporate databases on three different mainframes and I need to combine that with some information from a public data source and I need to bring them down to the database runing on my departmental processor and look at it through the filter of my personal workstation, I don't want to know how the databases work to do that," she said.

"I want something on my system so I know:

- How to shop for data.
- How to talk to systems where that data resides and
- How to take the queries I make in English and translate it into computerese and get the data and bring it down to my system in appropriate format.

"There are pioneering products in existence that do that," she said, "but they're not the kind of products that you can easily use or have a large number of people work with.

"We're going to have this kind of product running on PCs in front of popular office-automation vendor systems some time before this decade is out. . ."

Wohl was in Canberra to address a DP managers meeting hosted by Ben Dunn, DEC's government marketing manager for the South Pacific.

Amy Wohl . . . outlining some "future technologies"

Sun, NAS agreement

SUN Microsystems signed a joint development agreement with National Advanced Systems. The two promote applications compatibility between NAS mainframes and Sun workstations using Sun's Open Systems Netwrok and a common operating system based on Sun's Sunos Unix-based system.

Sun product manager Bill Keating said: "The agreement gives us a broad base of compatibility with NAS and IBM mainframes." He added that the more than 1,000 software packages already ported to Sun will now be compatible with IBM and NAS mainframes.

"This is a first," Keating said, "to have two such manufacturers make an operating system available across such a wide range of products."

Capability for Sun will attract government users who require mainframes to run versatile software programs.

Until recently, the major drawback of Unix was its communications abilities, Logan said. Sun has tried to address this problem with its Network File System (NFS) communications software.

"Now that Sun has developed the NFS to be a highly secure communications system, it has a chance of becoming the standard file protocol for Unix based systems," Logan said.

Logan said Sun's main rival, Apollo Computer, had been successful with its own proprietary system protocols.

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DEC moves on several fronts to combat threat from PS/2

FRAMINGHAM, Mass — Digital Equipment Corp, preparing for the tsunami of IBM's PS/2 to break against the mini coast, is looking to license Microsoft's OS/2 for use with its own line of computers in the US after testing the waters in Europe.

At the same time DEC appears to be preparing another line of defence against Big Blue through increased connectivity with the Apple Macintosh range. With increased access to both Apple and IBM computers, DEC would take advantage of an enormous installed base of PCs.

And DEC itself may soon unveil a new micro-computer soon that supports OS/2, reports Denis Hart, of the IDG publication *Federal Computer Week,* quoting industry sources.

According to analysts, DEC is trying to make absolutely sure that its federal and commercial customers can transport applications from IBM to DEC's Microvax in the future. The decision is said to be strategic to the company's number two position in an IBM-dominated market.

A DEC manager has already gone on record saying the company will license OS/2 in the UK. Charles Monk, a Vaxmate product manager in Reading, England, said DEC will release OS/2 at the same time as other hardware manufacturers in the UK.

Industry analysts said the Microsoft operating system will prove strategic for DEC. David Taylor, program director with consultants the Gartner Group, said market demand will force DEC into licensing the OS/2 environment in the US as well as in Europe. The strategy is based in part on DEC's need to attract users running applications on current MS-DOS software when they migrate to OS/2, according to Taylor.

Sonny Monosson, a DEC analyst who publishes the "Monosson on DEC" newsletter, and other analysts said they expect DEC to introduce new machines at the micro level soon. "DEC has to (introduce updated PC products) eventually, since the whole world is going microcomputer," Monosson said. "The market will push them into it whether they want to or not."

Meanwhile Apple's new series of hardware products, which made a debut at Boston's Macworld show last month, can now offer connectivity to Vax as well as MS-Dos environments.

Analysts also expect enhancements to Apple's communications and networking capabilities from third-party developers.

The Gartner Group's David Taylor, who said he is a "real proponent of DEC-Apple synergy," believes that DEC's expected migration toward the OS/2 operating environment in no way signals a move away from Apple.

According to an Apple spokesman, 25 per cent of the exhibits at the forthcoming Dexpo show will feature subjects dealing with Apple-DEC connectivity.

"Apple has a very good relationship with DEC, especially in the communications area," said the spokesman. "Apple is making major inroads in the business market," he added.

DEC officials could not be reached for comment on its relationship with Apple. According to Monosson, Apple may be courting DEC, but DEC may well decide to ignore the overtures.

Macintosh direct connection with software and hardware

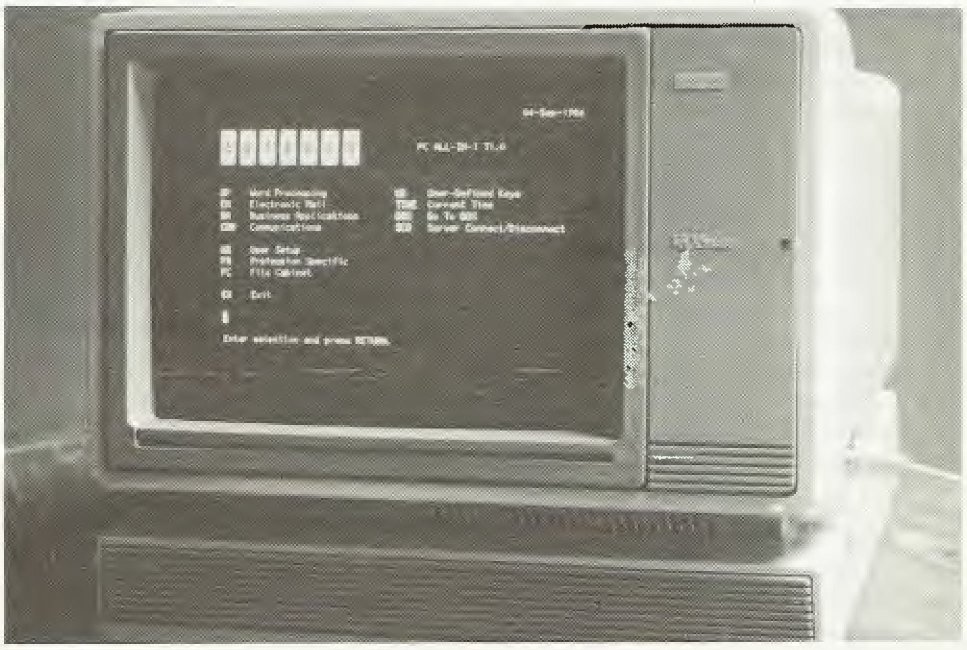
WASHINGTON — Technology Concepts, a Bell Atlantic subsidiary, and Dove Computer have jointly introduced software and hardware that will allow Macintosh computers to connect directly to DEC machines.

The new Community software from Technology Concepts gives Mac users virtual terminal and VT220 emulation, task-to-task communications, remote file transfer/access, remote file access services and network management functions.

The company already offers Decnet compatibility for IBM PCs and Unix systems. Sun Microsystems, Unisys, National Semiconductor, Elxsi, Alliant and Celerity have signed agreements to port and distribute Community.

For Mac connectivity, Community will run on Dove Computer's Fastnet intelligent Ethernet controller, a high-speed communications engine centred upon a 68000 CPU. Fastnet provides a gateway from small office networks to various high-speed networks.

The Apple systems supported by Community and Fastnet include the Macintosh-Plus, SE II and 512 with an addon SCSI adapter running Mac 3.3 or greater and Finder 5.4 or greater. Community sells for $US400 and Fastnet for $US899.



DEC's Vaxmate . . . an earlier attempt at winning the desktop battle

Mac integration next trend?

By Paula Musich

INTEGRATION of Apple Macintoshes into IBM PC environments may be the next big trend in local networking.

For the past two years, users have been sneaking Macintoshes in the back door of large organisations — not unlike the way personal computer users brought the new machines into their offices during the early 1980s.

Although MIS managers have tried to standardise on IBM PCs and compatibles, many Macintosh users are going around MIS because of the advantages provided by the Macintosh/LaserWriter combination for desktop publishing.

Others have found the graphics capabilities indispensable for computer-aided design and manufacturing, and some just liked the machine's graphic user interface.

However, users do not live by graphics alone, and much of the information desired by Macintosh users exists in the dominant IBM world.

This information, coupled with the greater functionality provided by IBM-oriented PC networks, is driving the demand for better links between the Macintosh and IBM PC realms.

Existing links, according to some Macintosh users, are backward. They bring the IBM PC into the Macintosh world, rather than the Macintosh into the MS-Dos world.

In anticipation of demand for Macintosh-PC links, major independent networking vendors such as 3Com, Novell and Banyan Systems are researching or have begun work on links to the Macintosh for their networking software.

3Com started shipping its 3+ for Macintosh at the end of July, and Novell is expected to provide Netware support for Macintoshes by the end of the year. Banyan announced initial support for Centram Systems' Transcendental Operating System networking software and is likely to provide tighter integration in its Virtual Networking System networking software in the near future.

Should these links provide the integration users are looking for, they will undoubtably succeed, creating their own special and sizeable niche in the market.

Perhaps someday they might even drive MIS managers into sanctioning a dual Apple and IBM microcomputer standard.

Transputers provide power to rival 8600 number-crunching

By Scott Mace

THE Macintosh is about to invade the turf of mainframes with the help of new parallel processing technology based on a UK invention.

Translink, an expandable accelerator package that uses 32-bit "transputer" processors, gives the Macintosh SE or Macintosh II power to rival the number-crunching performance of a VAX 8600, according to Mac addon specialists Levco of San Diego.

Transputers, developed over the past three years by Inmos, are a new kind of cascadeable co-processor.

The key to the transputer's power is the alteration of existing applications so that different components of the software can be run in parallel in different transputers. "You can use as many transputers as you have space or money for," said a Levco spokesman.

The company showed a fractal-generating graphics program that normally takes more than an hour to run on an unaltered Macintosh II; the same graphics screen was drawn in three minutes with two transputer chips installed in the computer.

Other uses of transputers are for dynamic structural analysis, engineering functions such as fast Fourier transforms, and distributed database processing, according to the company. Two of Levco's Translink transputers can also run as a fast general floating-point co-processor, running at more than one megaflop (one million floating points per second).

Translink now comes with a C compiler for creating applications; an assembler is also offered. The introductory kit for the Macintosh SE shown at Macworld Expo is $US1995, which includes the interface board, one transputer, and the C compiler and associated linker.

The Mac II version is $US2495 and will be available in six to eight weeks.

AN EXPLOSION in network operating systems is forecast by Lan technology wizard Dr Ken Thurber, who says that "the Lan game is on again".

While he predicts that almost every Lan O/S will sit on top of PC/MS-Dos, there will be a wide variety. They will cater for the "20-30 incompatible approaches" to file servers and will also serve new solutions such as PABX-based Lans and other technologies.

And competing with OS/2 even before that multi-tasking OS gets its feet on the ground will be a new breed of multi-user operating systems that squeeze the most out of the new 32-bit processors.

To keep you posted on the latest developments in the field in a cohesive manner, *Communications World* introduces a special page devoted to communications-oriented operating systems.

SFT Netware has third-party hooks

NOVELL has opened up its architecture to third parties with the introduction of System Fault Tolerant (SFT) Advanced Netware 2.1, a version of its network operating system said to feature minicomputer and time-share capabilities.

Among the many new features are built-in fault tolerance, significantly increased network management and security features and, for the first time, hooks to enable third parties to develop hardware and software extensions to the operating system.

Early reaction from users and resellers who have previewed the product is generally positive. However, most users will have to wait until the first quarter of 1988 to take advantage of the enhanced software. Priced at $US4695, SFT Advanced Netware 2.1 will be available on a limited basis only during the fourth quarter, Novell said.

SFT Advanced Netware 2.1 incorporates all of the features of Version 2.0A, including the Transaction Tracking System, which was previously sold as an option.

Application programming interfaces for third-party software and hardware developers provide the hooks, or value-added processes and value-added drivers. Value-added processes enable programmers to develop multitasking applications in protected and real-time mode, the company said.

The processes also aid in the development of server-based applications. Value-added drivers enable users to use non-Novell drives on their networks. Netware users are now limited to a volume size of 250M-bytes, according to a network specialist. This restriction has now been removed.

Among the highlights of SFT Advanced Netware 2.1 are a virtual console, which allows a supervisor to monitor a local-area network.

Fusion 3.2 adds to DEC links

VAX linkage specialist Network Research has quietly produced a new version of its Fusion software for intervendor communications.

Release 3.2 of Fusion adds network support for a much broader line of DEC computers, as well as electronic mail capabilities and remote communications features for Transmission Control Protocol/Internet Protocol (TCP/IP) users.

Fusion 3.2 now supports connections between DEC's Microvax 2000, Vaxstation 2000 and Vaxbi bus series products as well as IBM Personal Computers and Motorola 68000-based computers.

Previously, the product supported only the DEC Microvax II and the VAX-11/700 series. The Fusion family does not now support IBM mainframe operating systems.

The company claims the new version of Fusion, which costs between $US3000 and $US9000, will run 20 per cent faster. The release supports up to four DEC Ethernet controllers simultaneously instead of one.

Network Research says the product will initially run under DEC's VMS operating system. MS-Dos and Unix support will be added later.

The company has announced an R Commands option that it says allows TCP/IP users to issue remote commands with fewer keystrokes. With the option, a remote user on Computer A, for instance, can copy a file from Computer B to Computer C. R Commands is a series of Unix applications utilities compatible with the R Commands code originally developed at the University of California at Berkeley.

Fusion 3.2's electronic mail option features online help and commands that alert users at the exact time a message has been delivered and read. Both the mail and R Commands options will cost from $US100 to $US2250.

Users of Network Research's new software release already include Nixdorf Computer AG, NEC Corp, and Jet Propulsion Laboratories. At the JPL facility in Pasadena, Fusion 3.2 supporting TCP/IP has successfully linked Sun and Masscomp workstations under one network.

Analysts argue that Fusion 3.2 will bring Network Research a step closer to DEC. The two companies are already working on a joint development project to write gateways between TCP/IP protocols and Open Systems Interconnect protocols for the US National Bureau of Standards.

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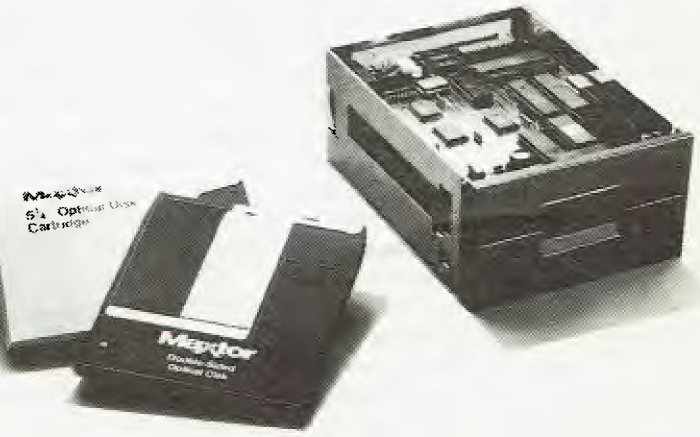
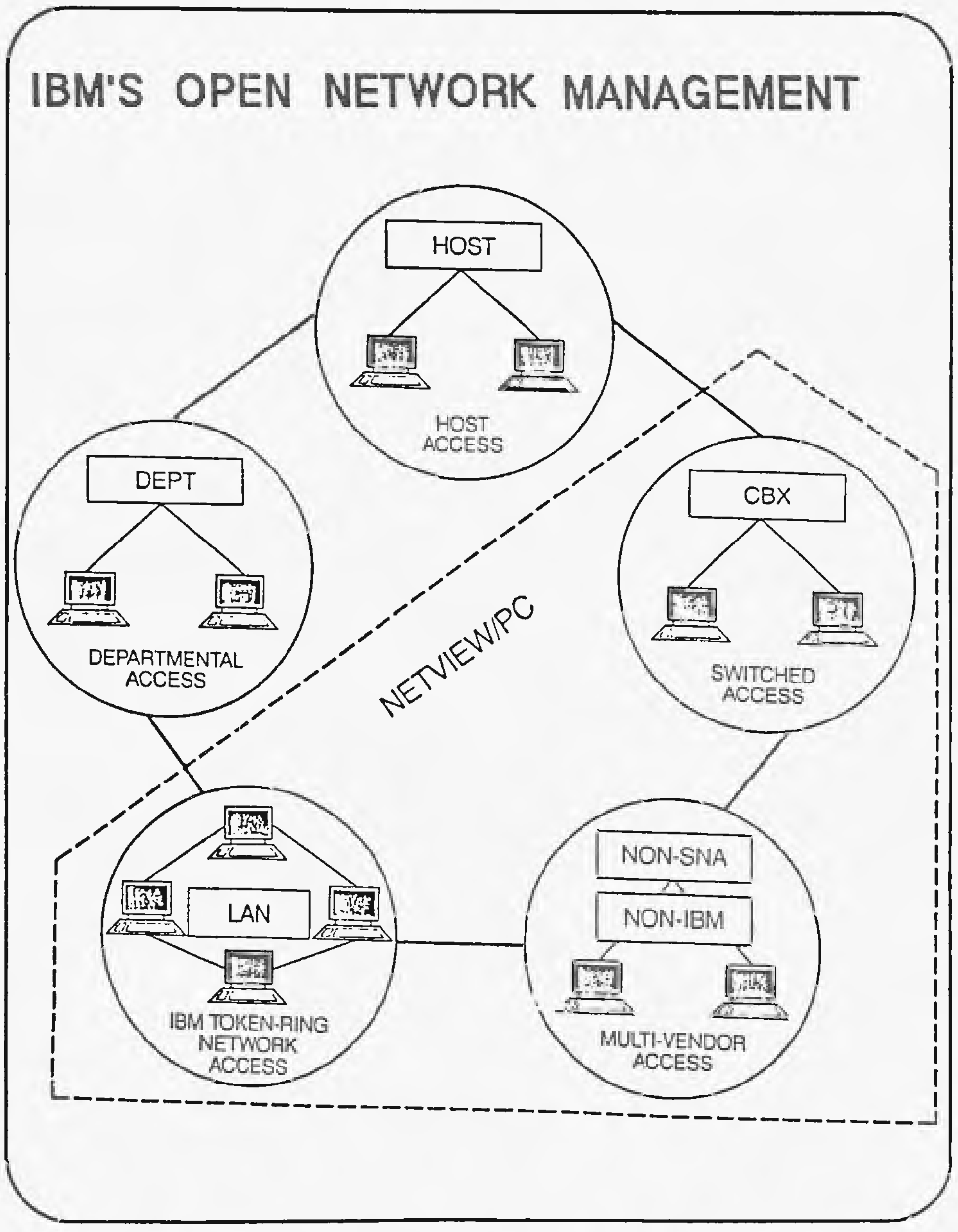


Heavy hitters open up their network gear



IBM'S OPEN NETWORK MANAGEMENT

By Paul Korzeniowski

THE ante in the network management game is expected to rise dramatically in the next few weeks as heavy hitters DEC, AT&T and Codex announce plans to open their network management products to other vendors' equipment.

The companies, none of which would comment on the announcements, are expected to provide specifications that allow other suppliers to interface their products to the companies' net management systems. By opening up their systems, the vendors will enable users to manage and control an entire network through a single net management system. Currently, most networks are controlled by a variety of autonomous network management tools.

The expected announcements mirror IBM's moves in the emerging integrated net management system market. IBM has provided information to other vendors that allows them to link their net management products to Netview, Big Blue's host-based net management system, through Netview/PC.

At the Decworld product show in Boston this month, DEC is expected to announce plans to publish specifications that will help vendors link their network management systems to DEC's line of net management products. The net management announcement is one in a series of moves to open up DEC's net model, Decnet, so it can more easily support and control multivendor voice and data networks.

Analysts also expect DEC to announce an OEM agreement with a multiplexer manufacturer and a new release of Decnet, which can support Integrated Services Digital Networks naming services.

Codex has scheduled its new product announcement for September 15. Analysts expect the company to unveil a highend net management system that will control the company's modems and multiplexers. Customers must now purchase different net management systems to control different types of Codex equipment. The company is also expected to publish specifications that will enable other vendors' equipment to exchange information with the new system.

The new system will support more lines than the current top-of-the-line 4860 net management system, which supports 744 lines. Analysts report that Codex is developing expert system network management capabilities, which would automate a number of tasks now handled manually.

AT&T, Codex and DEC are among the growing number of vendors entering the integrated net control system market.

Digital Communications Associates and US West Network Systems intend to develop comprehensive network management systems based on Open Systems Interconnect. Network Equipment Technologies (Net) also plans to integrate other vendors' equipment with its network management system, Timplex. DCA and Net also plan to develop an implementation of Netview/PC.

Catcom aims to 'log the lot' with modular management package

SYDNEY — Despite the strong trend to private voice and packet-switching networks, until recently there has been little progress on integrating the management of both systems.

A new strategic offering from Catsco is intended to fill the gap, and PABX vendors as well as Telecom are considering it for reselling under their own label, according to Catsco marketing manager Owen Richards. Telecom is already selling the company's call account processor hardware/software package, Monitor, which can log and analyse between 1500 and 27,500 calls.

Richards told a meeting of Atug's PABX special interest group here recently that the Victorian Vistel network was interested in the Catsco network management products.

"Senior management is not concerned with the frustrations of network managers — network managers are paid to be frustrated. Senior management is concerned with the capital investment in equipment being properly utilised," said Richards.

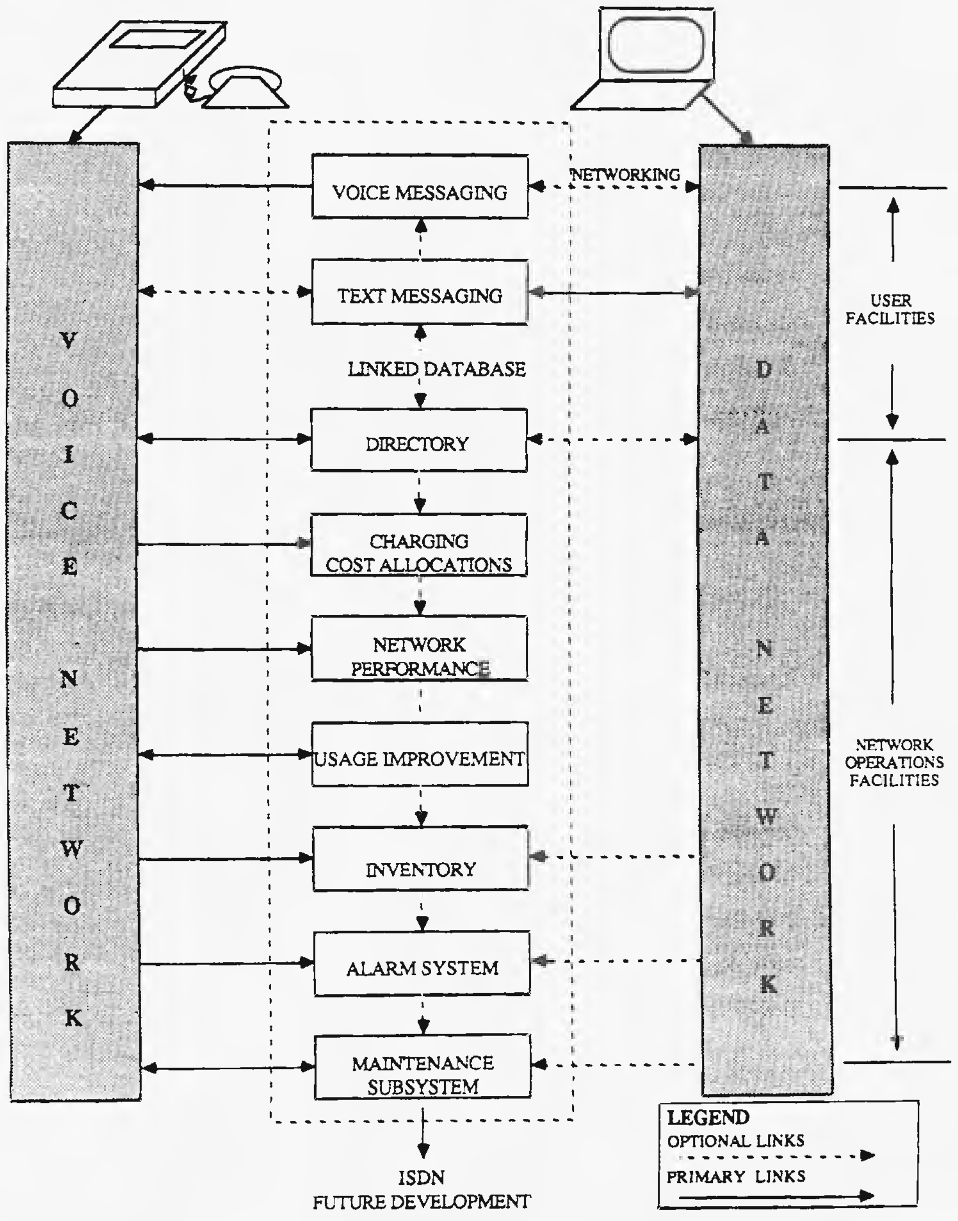
The new communications operations and management package, Catcom, is undergoing field trials now and will be delivered in the fourth quarter of this year. Apart from offering cost recording and directory services across the network, Catcom will permit complete communications management, including voice messaging, according to Richards.

Like the company's other products — which Richards described as "classic Tims packages covering all ranges and brands of PABXs" — Catcom runs under Unix V on a 32-bit Torch CPU with bit-mapped color screen as the main network management processor. The various applications now available are modular and based on 4GL database technology. They can be tailored to the purchaser's requirements, and new modules can be added as they are released.

Slave processors consisting of a Unix CPU card in a low-cost box with disk and power supply and a very inexpensive call logging unit (around $A3000 including software) extend the reach of the package down to the smallest remote site in the network.

In today's multi-vendor networks, different PABXs typically produce data in different format. The Catcom package is said to convert these into a standardised reporting format that gives network managers a consistent view of the operation.

NETWORK CONFIGURATION



Push PC Network, IBM tells dealers

By Patricia Keefe

IBM's willingness to market Novell's Advanced Netware network software to business customers may be on the wane. A consultant working on a very large Token Ring network said IBM representatives have shown him an internal memorandum telling direct sales personnel to push IBM's own PC Network program in place of Netware.

A spokesman for IBM declined to comment, other than to say: "It is IBM's policy not to disparage any competitor in any way."

IBM has a formal agreement with Novell to bundle Netware with IBM network hardware and educational software for sale to the education market. There is no such agreement targeting the business market, but IBM's direct sales personnel have successfully sold Netware into that market for at least a year.

At one point last year, an IBM spokesman confirmed claims that the bulk of IBM's Netware sales were to the business market.

When asked whether he was aware of any change in attitude at IBM, Craig Burton, Novell's vice-president of corporate development, said he was not, but added that he "wouldn't be surprised" if there was a change.

A number of network analysts echoed Burton's comments, noting that it is only natural for IBM to push its own products. But this has not always been the case in networking for IBM.

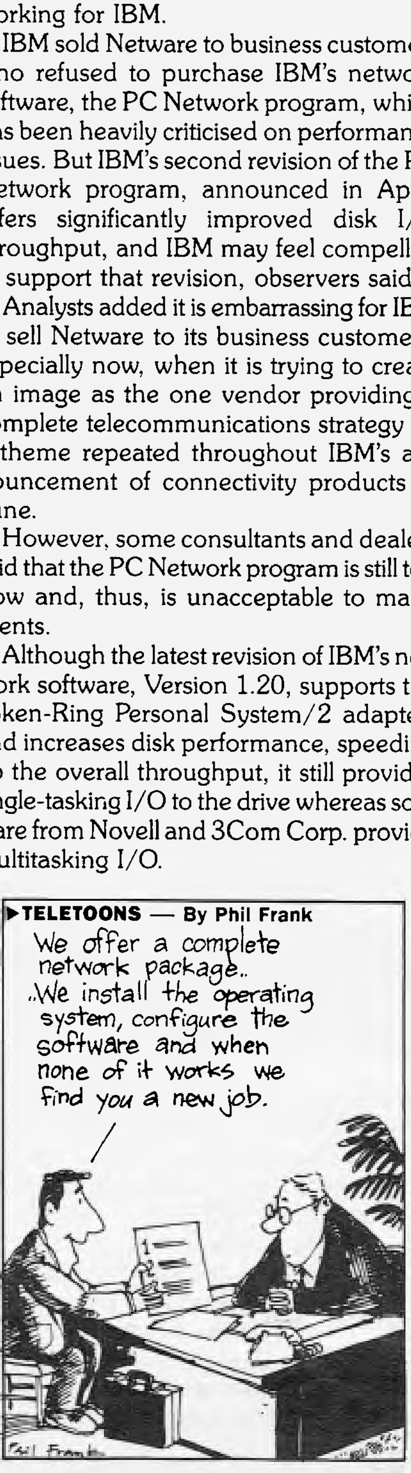
IBM sold Netware to business customers who refused to purchase IBM's network software, the PC Network program, which has been heavily criticised on performance issues. But IBM's second revision of the PC Network program, announced in April, offers significantly improved disk I/O throughput, and IBM may feel compelled to support that revision, observers said.

Analysts added it is embarrassing for IBM to sell Netware to its business customers, especially now, when it is trying to create an image as the one vendor providing a complete telecommunications strategy — a theme repeated throughout IBM's announcement of connectivity products in June.

However, some consultants and dealers said that the PC Network program is still too slow and, thus, is unacceptable to many clients.

Although the latest revision of IBM's network software, Version 1.20, supports the Token-Ring Personal System/2 adapters and increases disk performance, speeding up the overall throughput, it still provides single-tasking I/O to the drive whereas software from Novell and 3Com Corp. provide multitasking I/O.

▶**TELETOONS** — **By Phil Frank**


We offer a complete network package..
..We install the operating system, configure the software and when none of it works we find you a new job.
Phil Frank

New NCP supports SNA

IBM plans to bring out a new version of its Network Control Program (NCP) to support several important System Network Architecture (SNA) networking capabilities that were announced in June but cannot be used with the current NCP version.

Two major features that are dependent on a new or significantly modified NCP are front-end processor support of PU2.1-based peer-to-peer communications and the ability to reconfigure SNA nodes without bringing the entire network down.

IBM also plans further enhancements to its 9370 communications architecture that will be designed to deal with current limitations on the number of 9370s that can be installed on the same SNA network, an IBM spokesman says.

"ACF/Vtam Version 3 Release 2 supports many of the announced June 16 features," the spokesman said. "But you do need a new NCP — or a modified version of a current NCP — to support PU2.1 and for dynamic network reconfiguration."

The updated NCP will be available in time for IBM to meet its announced third-quarter 1988 shipment deadline for these features.

The yet-to-be-announced NCP, which IBM referred to as the "then current NCP" in its June announcement, will interact with IBM's Advanced Communications Function/Vtam (ACF/Vtam) Version 3 to allow PU2.1 devices to communicate through a front-end processor without the need for host intervention.

The IBM spokesman offers one caveat, which he said was not made clear during the initial announcement: "You do need to have an initial, one-time, it's going on communication to the host, to let it know that contact through the front-end processor is happening." After that, the host stays out of the picture.

IBM also hints that users can expect another round of IBM announcements aimed at making the 9370 better able to communicate as a departmental processor node rather than as a full-fledged mainframe taking up a full sub-area of an SNA network.

SNA protocols now only allow up to 255 sub-area addresses on any network system. This is a drawback for companies that want to set up communications between a thousand or more 9370s, as several of the largest 9370 buyers intend to do.

ISDN
ASAP

The Integrated Services Digital Network (ISDN) is the promised land for many vendors. Users are warily eying Telecom's tentative moves to mint new cross-subsidies from what may become a big business bonanza.

At present, only the makers of optical fibre and related technology are cashing in — and giving Australia a welcome lead in the field. What benefits — and new costs — will ISDN bring for the user when it is gradually introduced from next year? Our Core Report will seek to tease out some clear answers.

The October issue of Communications World will also look at voice/data integration. Editorial contributions on both topics are welcome. Please contact the editor, Luis M Huesch, on (02) 960-3710 or (02) 439-5133. Deadline is early in September.

For advertising queries, please talk to Terry Swan, the national advertising manager for **Communications World**. You can reach Terry on **(02) 439-5133**. The deadline for advertising material is September 11.

COMMUNICATIONS
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Infolink set to re-power Clirs database network

SYDNEY — Former Clirs managing director Anthony Gould has made a successful $A15.6 million bid for the assets and business of Computer Power's Clirs division to form the nucleus of a comprehensive information retrieval system.

Gould made his bid as the new chief executive of the Infolink Group Ltd, a joint venture between Perth entrepreneur Lawrence Wilson through his association with management and investment company Stinoc and the NSW Investment Corp (NSWIC).

The buy-out, which includes Clirs' IBM-based computer centre and communications network, is conditional on the Federal government approving the transfer of Clirs' exclusive database licences to the Infolink Group. A spokesperson for the group said no difficulties were anticipated.

Clirs holds licences to publish Crown copyright legal texts, as well as those of the Corporate Affairs, National Companies and Securities Commission and Tax Office databases. These will form the core business in Infolink's planned push to become Australia's dominant electronic publisher of "professional" databases.

Gould said the funding ability of Infolink would ensure that Clirs would "realise its full potential as one of the world's most innovative and comprehensive information retrieval systems".

The Infolink Group also announced it would buy from its joint venture partners shareholdings in Sydney-based Infolink Software Pty Ltd and its US and UK subsidiaries Listen & Learn, which market self-training systems for application programs. It also bought a 60 per cent share in AG Systems Pty Ltd of Melbourne, developer of an online share registry package, Sharestar. AG Systems also markets the Microfocus range of programming tools in Australia.

Infolink said other acquisitions were being negotiated. Gould said he expected the Stinoc and NSWIC MICs to provide "a filtered breeding ground for ventures" to strengthen the Infolink Group through businesses with well-positioned computer products.

"Our role will be to assist in the second stage of expansion (of such partner businesses), to help fund their own strategic acquisitions and to provide vital international marketing expertise," Gould said.

"Our intention is to float the Infolink Group within the next two years."

Anthony Gould, chief executive of newly formed Infolink Group Ltd launches Clirs buy out

Massive switch to Token Ring starts to eclipse Ethernet

By Paul Korzeniowski

SPURRED by IBM's success in winning major local networking contracts among large users, sales of token-ring networks are increasing dramatically and, for the first time, may be surpassing sales of Ethernets.

According to Ken Thurber, president of Architecture Technology, orders for all types of token-ring network interface cards in the first quarter of 1987 eclipsed those for Ethernet network cards.

He based his claim on his company's recently conducted survey exploring the buying intentions of 4000 local-area network users.

Thurber said large token-ring network acquisitions by Fortune 500 accounts, IBM's traditional stronghold, have fuelled the market shift.

"One of our clients ordered 15,000 IBM Token-Ring Network nodes," he said. "Once a few orders of that size are placed, a market shift is inevitable, and IBM has started to receive such orders."

The Yankee Group disagreed with these shipment numbers, but conceded that revenue from sales of token-ring interface boards has exceeded revenue generated by Ethernet component sales. It said vendors shipped 87,300 Ethernet interface boards worth $US38.5 million in the first six months of this year, compared with 47,900 token-ring interface boards worth $US52.3 million.

The ground swell of support for IBM's Token-Ring is expected to continue as large companies establish it as the de facto standard for corporatewide networking.

Initial apprehension faded when IBM introduced Token-Ring-related products that clarified its strategy. In the past six months, the company began shipping Token-Ring interfaces for the IBM 3725 front-end processor, IBM's 3174 terminal controller and the IBM System/36 minicomputer. In addition, the company enhanced its Token-Ring network management tools with a link to NetView, IBM's host network management package.

The growing interest in token-ring networks has prompted some traditional Ethernet vendors to add token-ring products to their line. 3Com Corp recently began shipping token-ring network cards.

Despite token-ring's growing acceptance, 3Com's Ethernet business has continued to grow steadily, the company said. But Thurber claimed the average token-ring network is five to 10 times bigger than the average Ethernet. While DEC may be selling 10-node networks, IBM is selling 100-node networks, he said.

Plessey may yet fall prey to GE . . .

By Amiel Kornel

LONDON — Plessey Co Plc, the UK telecommunications and electronics group, last month posted a 26.1 per cent fall in operating profit to 29.4 million pounds ($A67 million). Revenues slipped 11 per cent to 299.5 million pounds ($A685 million) during the quarter ended July 3.

"Plessey is not in particularly good shape," commented John Chessher, analyst with London stockbrokers James Capel & Co, "but that is because they are exposed to two of the worst markets in the UK — public switching and defence. It's not a problem of management."

Plessey officials blamed much of the decline on delays between order and payment for the company's System X telecommunications switching system. System X, developed jointly with General Electric Co Plc (GEC), contributed 30 per cent of the telecommunication's division's profits.

Plessey successfully fended off a hostile takeover attack from rival GEC last year. Supporters of the merger argued that the two companies must rationalise their telecommunications businesses if the UK is to successfully compete on worldwide public switching markets. Analysts estimate that each firm's activities in this area are operating at 50 per cent of capacity.

In February, Plessey and UK software and services firm Cap Plc formed a joint venture aimed at the fast-growing market for data communications networks in Europe. And in May, Plessey and Racal Electronics Plc created jointly owned Orbitel Mobile Communications Ltd to design, develop, manufacture, and market mobile-telephone equipment.

In the US, where Plessey is developing military electronics with Westinghouse, Distributed Logic Corp (Dilog) of Anaheim, California, said it has entered into negotiations with Plessey to acquire Plessey's Peripheral Systems subsidiaries in the US, Canada and the UK, which generated an estimated $A71 million in sales in the year ended April 3.

Tandem buys share in Netlink

SYDNEY — Tandem Computers has bought a minority interest in Netlink Inc and both companies will jointly develop and market products to integrate Tandem Nonstop and IBM systems via SNA solutions.

Netlink's local subsidiary Systems Technology gave no details of the deal but quoted Netlink chief executive Paul Wood as saying that "Tandem's leadership in online transaction processing systems and networks fits naturally with Netlink's charter to provide enhanced SNA connectivity."

Tandem vice-president of new ventures, Gerald Held, said the relationship was "part of our ongoing efforts to develop strategic partnerships with organisations whose strengths complement our corporate goals and extend Tandem product capabilities."

The company's marketing manager in Australia, Brian Mollet, said: "In Australia and New Zealand Tandem is involved with a number of large networks with IBM. This new relationship will greatly enhance the flexibility the SNA user has for the management of networks."

Lee shored up

MINNEAPOLIS — US terminal maker Lee Data has teamed up with Italy's Olivetti in a joint venture company that will market a combination of Lee Data and Olivetti products for the 3270 market outside the US and Italy. Lee Data indicated that it will form similiar ventures with Olivetti later this year to market products in France, Spain, Canada and Australia. Olivetti will continue to market Lee Data products in Italy under the Olivetti name, in continuation of the OEM contract the two companies began in 1982.

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**1. What is your primary job function?
(Please circle one only)**
01 Director/Partner/General Manager
02 Co Secretary/Financial Controller/Accountant
03 Director/Manager of Office Admin
04 Director/Manager of MIS
05 Director/Manager of DP/ADP
06 Projects Manager
07 Systems Software Management/Development
08 Manager/supervisor operations
09 Systems analyst
10 Analyst/Programmers
11 Programmers
12 Operations Staff
13 Database administrators
14 Communications Manager
15 PC/Micro Managers
16 PC/Micro specialists
17 Computer Consultants
18 Communications Consultant
19 Computer Contractors
20 Consultants (other that Computer consultants)
21 Technical/Scientific/R&D
22 Computer Sales/Marketing
23 Sales/Marketing (other)
24 Librarian/Educator
25 Lawyer/Medicine
26 Student
27 Other

2. What is the primary business activity of your company/organisation? (Circle one only)
01 Manufacturer — Computer/DP Hardware/Peripherals
02 Manufacturer — all other excl. computers and electronics
03 DP Service bureau/software/planning/consulting
04 Public Utilities/Communications Systems/Transportation
05 Wholesale/Retail
06 Finance/Insurance/Banking
07 Mining/Construction/Oil and Refining
08 Business services (not DP)/Real Estate
09 Education/Medicine/Low
10 Government-Federal/State/Local
11 Printing/Publishing/other communication services
12 PR and Advertising
13 Communications consulting services
14 Manufacturer-communications systems equipment
15 Other

3. In your company, please indicate your primary functional involvement with communications.

	Data	Voice	Image
Planning/ Development			
Operations			
Management			

4. Which best describes your organisation's involvement with communications? (Please circle one only.)
A. Commercial or institutional enduser of communication systems and equipment (including all industries and businesses).
B. Government — Federal/State/local (including military).
C. Interconnect (including manufacturer, contractor, wholesaler or other vendor).
D. Communication service (including common carriers, telephone companies, utilities and broadcasting).
E. Systems integrators, systems and software houses, service bureaus and consultants.
F. Other (please specify).

5. What size is your organisation by employee numbers (circle one).
01 Very small (less than 50 employees)
02 Small (50-250)
03 Small/medium (250-500)
04 Medium (500-1000)
05 Medium/large (1000-5000)
06 Large (5000-10,000)
07 Very large (10,000 plus)

6. In which ways do you typically become involved in acquiring communications products (data, voice, and/or video) and services? Circle ALL that apply.
1. Recommend/specify
2. Identify/evaluate potential vendors
3. Approve the acquisition
4. None of the above

7. Check ALL that apply in columns A and B.
A. I am personally involved in the acquisition process (specification, selection, approval) for the following products and services:
B. These products and services are presently in use at this location:

A B *Product/Services*
Computers
01 ☐ ☐ Personal computers
02 ☐ ☐ Minis
03 ☐ ☐ Mainframes
Data Communications
04 ☐ ☐ Communications processors
05 ☐ ☐ Comm./networks software
06 ☐ ☐ Digital switching equipment
07 ☐ ☐ Facsimile
08 ☐ ☐ Modems
09 ☐ ☐ Multiplexers
10 ☐ ☐ Protocol converters
11 ☐ ☐ Network mgmt & control
12 ☐ ☐ Test equipment
13 ☐ ☐ 3270 controllers
Telecommunications
14. ☐ ☐ PABX
15. ☐ ☐ Commander/key systems
16. ☐ ☐ Integrated voice/data terminals

A B *Product/Services*
Transmission/Network Services Equipment
17. ☐ ☐ Microwave
18. ☐ ☐ Satellite earth stations
19. ☐ ☐ Local area networks
20. ☐ ☐ Wide area networks
21. ☐ ☐ Packet switching equipment
22. ☐ ☐ Fibre optic equipment
Communications Services
23. ☐ ☐ Packet switching services
24. ☐ ☐ Cellular mobile radio services
25. ☐ ☐ Electronic mail
26. ☐ ☐ Enhanced services
27. ☐ ☐ Paging systems

8. How much (estimate) does your company spend annually on communications?

$	0-50,000	50-250,000	250-500,000	500-1 mil	1-5 million	5 million +
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ongoing						

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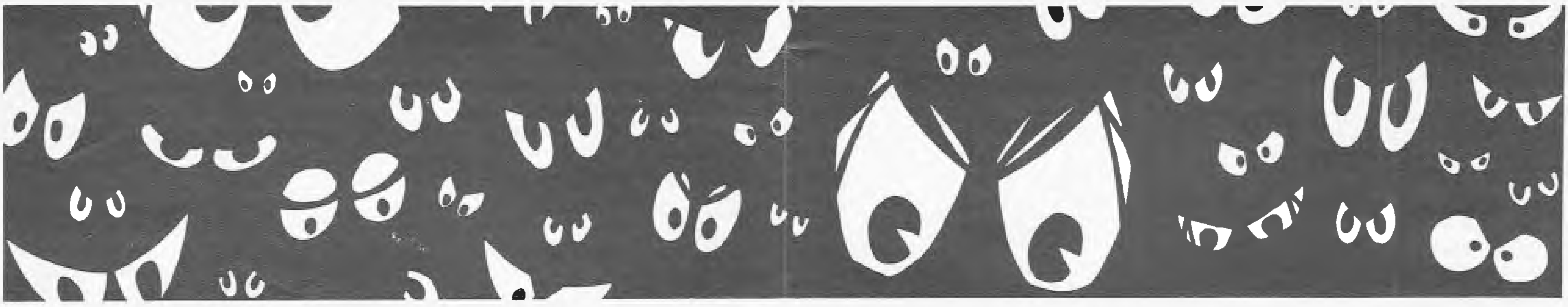

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industry outlook

PYMBLE, NSW — Communications cabling specialist Metal Manufactures has won a Telecom order for $A6.2 million worth of optical fibre cable for the second stage of the east-west trunk link between Perth and Port Augusta. Its Austral Standard Cables subsidiary will deliver three quarters of the 1500km of 14-fibre single-mode link. Twelve fibre "channels" will carry Telecom network traffic, the other two are to be used for communications and track control by Australian National Railways.

LANE COVE, NSW — Scitec Communications Systems has teamed up with US supplier Larse Corp to jointly develop a so-called Digital Service Unit (DSU) for the North American T1 network. The DSU — which replaces a separate Scitec Saturn D4 and a CSU from Larse — interfaces customers' computers, multiplexers, PABXs or video terminals to the 1.544M-bit/sec T1 service. It will offer a satellite buffer as an option that gives users a direct interface to satellite circuits.

MILSONS PT, NSW — Infotron Systems has won a $A200,000 contract from Australian National Line for the company's new nationwide data communications network. Infotron model 990 and 790 network processors for the backbone of the new net, while smaller sites are served by SM600 multiplexers. Users on the network can access either the company's Fujitsu mainframe in Melbourne or DEC minis in Melbourne, Sydney and Brisbane.

SYDNEY — Data Peripherals has been appointed Australian and New Zealand distributor of AST Research's local area networking products, including the Starlan twisted-pair LAN and the AST-RSN. Data Peripherals, a subsidiary of Datamatic Holdings, has supplied more than 1500 Lans since 1983, most of them Novell products. Both AST network products are supported by the company's version of Novell's Netware operating system.

MELBOURNE — Olex Cables has produced a 10km fibre-optic cable claimed to be the longest ever made in a continuous run in Australia. The cable was made for the Perth-Kalgoorlie stage of Telecom's East-West fibre link across Australia. Long cable lengths, while difficult to manufacture, save costs because fewer joints are required during installation.

CHATSWOOD — Digital Equipment Corp (Australia), the originator of what became Telecom's Category "A" scheme for supplier certification of data products, was one of the manufacturers recently who were formally awarded a Category "A" certificate. The scheme slashes through at least nine months of paperwork in submitting design documents and waiting for approval of even a simple terminal, says DEC, which began pushing for its adoption back in 1981. Meanwhile the company also announced plans to move its South Pacific headquarters from Chatswood to Rhodes, a Sydney industrial suburb.

PERTH — WA-based encryption specialist Ran Data Corporation reported sales of $A1.5 million for the first six months of this year, compared with $A625,000 for the same period last year. It said shipments scheduled for the second half are worth $A5 million as it services tenders won in the European banking industry. The company is also expanding into the US market with the acquisition of Carcel Telecommunications Inc, a leading-edge supplier of integrated voice/data products to carriers such as Pacific Bell.

ADELAIDE — Datatel Pty Ltd, the Melbourne-based supplier of Beehive IBM PCM terminals and the Kimtron and Zentec range of Ascii terminals, has expanded operations to South Australia, opening an office in Adelaide recently. The company, which has offices in NSW and the Northern Territory, said it will retain its existing distributors in Queensland and Western Australia for the foreseeable future.

Uni-Lab wins tanker job

PERTH — Uni-Lab Telecommunications Ltd has entered the competitive Japanese market through an $A800,000 contract with three major Japanese shipbuilding companies.

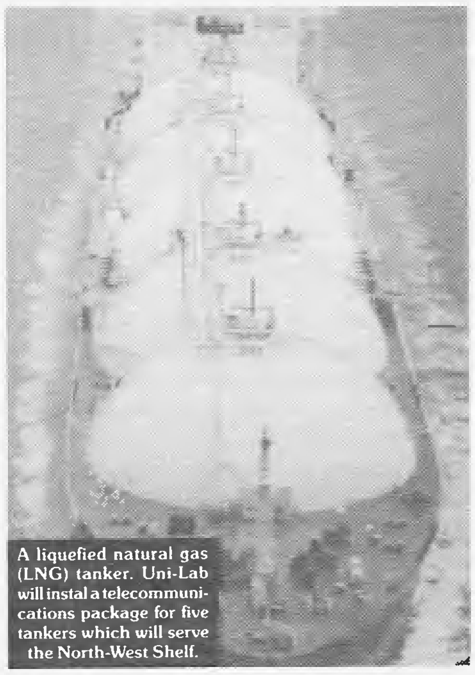
The Perth-based company has negotiated to design, supply and instal a telecommunications package for use of five liquefied natural gas tankers which will serve the North-West Shelf. The systems design is based upon a specification prepared by Woodside Offshore Petroleum Pty Ltd.

The equipment to be designed and supplied by Uni-Lab is used to protect the tankers when in Australian ports. This is the first time a radio system has been used to provide the ultra-reliable medium necessary should a loading shutdown sequence arise. The Emergency Shutdown System (ESD) protects not only the LNG vessels, but also the LNG production plant. Negotiations for the onshore design are in progress.

Uni-Lab project engineers will be installing and commissioning the ESD systems at the various shipyards in Japan as tanker vessels near completion, according to Uni-Lab Projects director Keith Wright.

"We are justifiable proud of our overseas success, especially in the tough Japanese market," Wright said. "It is indicative of the calibre of Uni-Lab that such a vitally important engineering task can be performed by a West Australian company."

He said completion of the project was expected by June 1989.



A liquefied natural gas (LNG) tanker. Uni-Lab will instal a telecommunications package for five tankers which will serve the North-West Shelf.

AI '87

AUSTRALIAN JOINT ARTIFICIAL INTELLIGENCE CONFERENCE

November 2-4 1987
Sydney Masonic Centre, Australia

KEYNOTE SPEAKERS

- * Austin Tate, director, AI Applications Institute, University of Edinburgh.
- * Tom Kehler, president, IntelliCorp.
- * Raj Reddy, president AAAI and head, Robotics Institute, Carnegie-Mellon Institute.

Forty-nine papers have so far been received for presentation at the conference, including submissions from the US, Japan and Germany. One-third relate to industry applications of AI, one-third to applied AI research, and the balance pure research. These are being evaluated by referees.

Topics short-listed include:

- * An expert system for nuclear test ban treaty verification.
- * Real time expert systems for industrial plant control.
- * Spray painting machine configuration by an expert system written in XL.
- * Database oriented expert systems.
- * The development and deployment of expert systems in the financial services industry.

Further details from:

AI'87 Secretariat, Stephen Moore, Karen Rickwood (02) 439 5133, Fax: (02) 449 5512, Telex: AA74752. Address: PO Box 929, Crows Nest, NSW 2065.

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Computerworld EXPO

Local talent latches on to Lan world

By Luis Huesch

PERTH WA-based local and wide area network specialist Vianetix Australia is spreading its wings. The company is expanding to Sydney and Melbourne this month — only little more than half a year after setting up shop in Perth.

Managing director Clive Stone bases his confidence not only on his company's success as Australian distributor of the serverless peer-to-peer Vianet Lan, but on its locally developed products and consulting expertise as well.

Vianetix Australia has developed gateway and terminal server software that lets PCs and terminals on a Lan connect to IBM mainframes and DEC minis.

The Vianetix solution has just been accepted as the networking standard for tying PCs at Curtin University to Amdahls and Vaxes. (See diagram below.)

Stone sees export chances for the local product. It has already been demonstrated to the US Air Force's Tactical Air Command (TAC), and Stone expects "a substantial order" for the 300-odd TAC networks, used "for a secret application".

He said he had also shown the gateway server to Western Digital (WD) in the US. "We will probably sell the software to them," said Stone, adding that he had been asked to provide networking consultance services to the US maker of disk controllers and hard disk drives on PC cards.

WD recently bought Vianetix, of Boulder, Colorado, to expand into the Lan market, for which it already supplies PC addon cards in both Starlan and Ethernet versions. It was investing 80 per cent of its revenue in research and development of local area networking products, said Stone.

AT&T, which invented the twisted-pair Starlan network to sneak into the Lan market via clients' existing phone lines, is rumored to be after a portion of WD itself, which would make Vianetix Australia's local WD distributorship a prize possession.

Interestingly, AT&T's new Unix V version 3 has Vianet "hooks" built into it, according to Stone. (Vianet is available in both Dos and Unix versions, which can be linked across Lans.)

Stone did not wish to comment on the implications of such a deal but preferred to dwell on the gateway/terminal server products, "a homegrown Australian solution now ready for export".

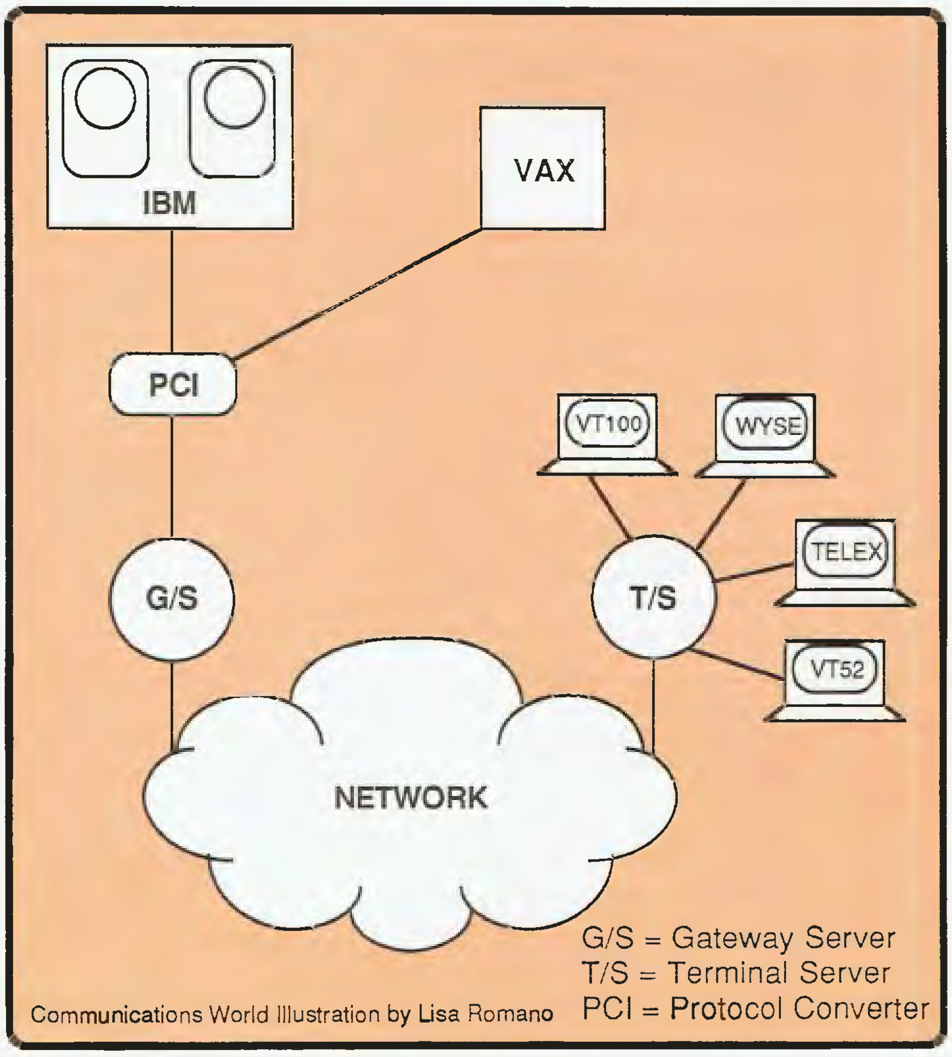
He explained that unlisted Vianetix Australia was "not a glossy company". It had some venture capital backing, six handpicked staff including the best programmers ("there are not a lot around who understand Lans"), and had grown through consulting. The company had employed outside consultants occasionally when it was "not sure of our long-term viability" but all this was now changing, said Stone.

He cited as "milestones" the 24-node network at Curtin University, a pilot net at Murdoch University, a 50-node Lan at Jeans West and a 30-terminal installation at the WA Department of Technical and Further Education. The average Vianet Lan installed was for five nodes, he said.

"We've been successful in every brand of government and commerce," said Stone. The company was capable of doing such diverse projects as adding X.25 packet-switching capability to Vianet (for Curtin) and networking Autocad to save a company the high cost of an extra architectural plotter.

"Our philosophy is to offer unparalleled sales and service support for Lan technology," said Stone. This includes cutting code

(Continued page 30)

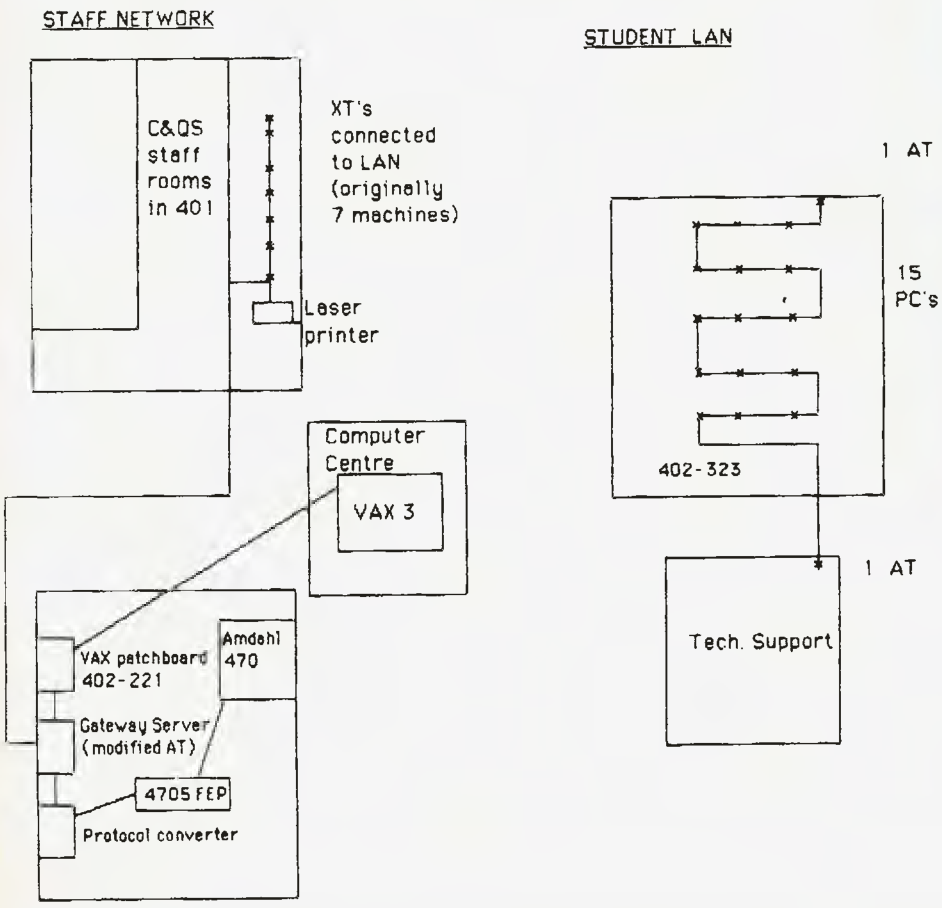


G/S = Gateway Server
T/S = Terminal Server
PCI = Protocol Converter

Communications World Illustration by Lisa Romano

Vianetix Australia's gateway and terminal server allows multiple linkages

Curtin University's Business & Administration Lan



Note 1 Eventually a connection between the Gateway Server in 402-221 & the PC's in 402-232 will be organised, thus combining both LAN's into a single LAN.

"Send three and fourpence, we're going to a dance!"

Ever since man found the need to send messages, the most important part has been the method he has chosen to send them.

Which suggests that in this instance, when the original message was to "send reinforcements, we're going to advance," the choice of a somewhat over-zealous despatch runner was definitely the wrong one.

KNOWING HOW TO SEND THE MESSAGE IS HALF THE BATTLE.

Today, the way you choose to send a business message can be just as confusing–and just as critical.

Because, in today's sophisticated world of business, communications play a vital role–particularly in the area of electronic messaging and information processing.

TAT 2892/L

SAA sets standards for future ATM programs

By Noel Bennett

SYDNEY — IBM's Systems Application Architecture ties in with the increasing realisation that software buyers should not only be concerned with functions, but also with interfaces and ease of use, according to William Simpson.

Simpson, a visiting executive from Sercom Corp, Dallas, also said he believed IBM's 9370 was that corporation's "most significant hardware announcement since the System/370".

William Simpson . . . packages must be rewritten

Sercom has developed and markets the Bancom authorisation and control management software for automated teller machines, together with an EFT/POS switch.

Simpson said SAA in effect set guidelines for software users and vendors, establishing a uniform method for using keyboards, terminal functions and programs which would be as similar as possible across all applications running on IBM machines.

While still in its early stages, SAA had set standards to avoid software and user-training becoming antiquated, Simpson said.

When selecting software, buyers should look very hard not only at its functions, but also the design of software interfaces, the language it was written in, and the interface for endusers.

More and more, the real cost of software was in training and ease of learning by the enduser, which escalated when software was changed, Wilson said.

Sercom's software is compatible with IBM and designed so that features and functions can be added to support new devices when available.

The company also greatly emphasises education and training. Until the release of SAA, Sercom, which is a value-added supplier of IBM's 4381 and 9370 machines, only had unofficial IBM guidelines to work with, Simpson said.

For example, IBM has always supported Cobol, and it was pertinent that SAA also supported this language and not IBM's assembly language. Much software would now have to be rewritten to follow the SAA guidelines.

Simpson said one of the reasons he thought the 9370 was a most significant announcement was the degree of redundant circuitry it contained, making it a quasi fault-tolerant machine.

Computing was becoming a utility such as electricity supply. Many businesses could not survive without continued supply of computing power. This requirement for continuity was underscored by the success of such companies as Stratus and Tandem.

Simpson said he had been exploring the possibility of marketing the company's products in Australia, but it was still too early to make a decision.

Peer-to-peer state of art

By Elisabeth Horwitt

THE following is a rundown of several companies' efforts to provide products that work with IBM's peer-to-peer Systems Network Architecture (SNA):

- Netlink has started working on its own PU2.1 implementation, which will fit its network concentrator for two roles, according to spokesman Richard Buckle.

  First, the box can reportedly be a low-cost network node that performs routing among PU2.1 devices. Second, it can perform mapping between PU2 and PU2.1 protocols so that IBM 3274 controllers can communicate over a PU2.1 backbone network, according to Buckle.
- NCR Comten is committed to duplicating IBM's expected new Network Control Program within approximately a year after it is shipped, according to the company.
- Communications Solutions which already offers both LU6.2 and PU2.1 software, has been waiting for IBM to extend support of those protocols further into its mainframe environment, according to John Pickens, senior communications architect. He said Communications Solutions expects that its existing products will communicate with IBM's LU6.2 VTAM implementation, but the company is ready to do any necessary reprogramming.
- Systems Center which sells VTAM-based bulk data transfer software, said it will also provide an LU6.2 version of its VTAM-based bulk file-transfer product shortly after IBM's VTAM-based LU6.2 ships — which should be sometime in the third-quarter of 1988.
- Cincom Systems said it plans to bring out an LU6.2 version of Netmaster, which is a direct competitor with IBM's Netview network management system, around the same time. Cincom has been making its own slew of announcements to ensure that Software Developments' product is at least a match for Netview in a distributed SNA environment.

  Another Netmaster enhancement under development in Sydney is a background mode capability that will allow the operator to respond to a problem on the network while continuing to simultaneously record incoming alarms and alerts, according to the company.

soft spots

Hayes Microcomputer Products has announced an upgrade to its Smartcom II communications software for the Apple Macintosh to make it compatible with Apple's new Multifinder operating system, as well as with the Mac SE, Mac II, and the Hayes V-series high-speed modem products. The enhancements permit Smartcom II to coexist with other Multifinder-compatible applications, the company said.

Keylogic is delivering a batch processing program for local area networks running Novell's Netware network operating system. Lan Batch lets network users send jobs to queues that have been established at other workstations on the network, keeping their own workstations free for use while disk- or processor-intensive activities take place on more powerful computers. Typical applications for Lan Batch would include supporting dedicated servers for compilers, printers, and database engines. Up to 50 jobs can be queued for processing, and each job can itself evoke multiple programs. Lan Batch costs $US125 for each server on the network.

Replacing its Smarterm 100 terminal emulation program, Persoft this month starts shipping Smartmove, which features background file transfer. The product emulates DEC's VT-100 terminal and lets users transfer files in the background while performing other tasks on the PC. Users can start a communications session either from the system prompt or from the program's dialling directory. Script files, pop-up operation, and Kermit and Xmodem file transfer protocols are also supported, the company said. Users can configure Smartmove with a window-based system, and can save up to 16 configurations in a dialling directory. Smartmove costs $US149. The company also announced that its Smarterm family of terminal emulation products is available on 3½in disks.

Strobe Data has introduced a co-processor card and software package for the IBM Personal Computer XT and PC AT that reportedly enables those machines to execute software written for Data General Nova minicomputers. The Falcon co-processor can execute DG's RDos and other software written for the Nova computers without any reprogramming or special software, according to Strobe.

Communications Solutions, Inc. (CSI) is now marketing networked implementations of its IBM LU6.2, 3270 and Document Interchange Architecture (DIA) communications software. CSI's Access/SNA APPC, Access/SNA 3270 and Access/DIA software will be available in networked versions this month.

Virtual Systems has released software that enables an IBM PC to act as a host processor for up to 32 terminals or other peripherals. The company's Quick Connect software runs on a host personal computer and partitions the host's CPU to support multiple tasks. The product uses a scheduling algorithm to allocate available CPU processing time to terminals connected to the host in a star configuration via RS232 links.

Datasolve, of Sydney, has announced the availability of Magenta's Mail Manager communications package for Wang OIS and VS systems. The package is claimed to let users on a workstation send and receive electronic mail using a number of transport systems, including telex, teletex, Keylink (Minerva) and Delphi/DECmail, as well as communicating directly via message switches or asynchronous point-to-point services. Both messages and binary file transfers are supported, according to the company.

And with the ever-accelerating expansion of technology, there's an increasing number of options to choose from.

Which can cause confusion when you're trying to decide which product best suits your particular business needs.

BUT WHO WILL LEAD ME THROUGH THE MINEFIELD?

What you need is someone who can give you all the choices– and then help you to make the right one.

Someone like Telecom.

Because we have a complete arsenal of text products including Telex, FaxStream, Teletex, Keylink, Viatel and i-Link.

But more importantly, we've got a wealth of experience in the communications arena which enables us to tailor an integrated text solution to your specific business needs – no matter how modest or elaborate the application.

SO WHAT'S THE MESSAGE?

Like despatch runners, messages come in all shapes and sizes. From the short, urgent one-off message that advises head office that your flight has been delayed. To an inventory system ordering urgent stock replenishment.

In all cases, the accuracy, speed and even the ability to directly integrate with your office computer system can have significant impact on your business productivity.

The message is, of course, that it all adds up to making or losing money.

IF YOU'RE GOING TO ADVANCE, YOU'LL NEED REINFORCEMENTS.

Success in business is invariably related to productivity. So if you want to improve yours, you'll need all the ammunition you can lay your hands on. And knowing about all the options available for sending text messages should be an essential part of your battle plan.

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Telecom Australia

TAT 2892/R

3Com in e-mail software venture

NETWORK specialist 3Com Corp and protocol conversion experts Soft-Switch Inc have announced a software gateway that transfers electronic mail between 3Com local-area networks and IBM mainframes.

A week earlier, 3Com rival Novell had introduced an electronic mail connection linking its networks with electronic mail systems on computers from DEC and other companies as well as on IBM mainframes.

3Com communications said the key difference between the two methods is that Novell uses proprietary protocols, while 3Com uses IBM's Systems Network Architecture Distributed Services (Snads) standard.

"It's true that today, you can only connect directly from (3Com's) 3+ to the IBM Distributed Office Support System, but as time goes on, you are going to see more and more people moving to Snads," said a 3Com spokesman.

The product, which resides on an IBM Personal Computer AT or compatible system forms a direct link between 3Com's 3+Mail system and Soft-Switch's Snads Gateway/MVS or IBM's Disoss on an IBM host computer running IBM's MVS operating system.

Through these mail-server connections, users of the 3Com system have the ability to exchange messages with other Snads-based systems, including the IBM System/36 and 38, the 5520 and the 8100.

Other Soft-Switch products can be used to route electronic mail through the IBM host to systems from DEC and Wang systems. However, using that method would not be as efficient as using a direct link, according to Soft-Switch.

Gateway licences are priced between $US3000 and $US5000, depending on volume.

Telecom pushes new videotex gateway

SYDNEY — Telecom's new aim to make its Viatel videotex service an information hub between vertical market applications received a considerable boost recently with the release of a powerful third-party gateway package with an embedded text retrieval system.

The package, produced by Sydney systems house PSI, consists of two components, the Viashell gateway product initially running on DEC Vax minis, and ARM (associative retrieval method) a fast random data access program.

Viatel manager Mouli Ganguly, launching the product with PSI representatives in Sydney recently, said Viashell fitted in well with Telecom's strategy of repositioning Viatel toward delivering complex DP applications.

Its steps in this direction included

- DP gateways for information providers outside Viatel
- Interactive processing on the Viatel Vaxes, and
- Viacorp, a new system to provide in-house videotex applications to corporate users.

Vertical applications now online included interactive processing for doctors through the Royal Australian College of Practising Physicians, and two automotive applications, for the Road Transport Authority of Victoria and Australian Guarantee Corporation.

"Without the PSI type of software we couldn't do this," said Ganguly, adding that because Viashell conformed to the latest Cept gateway protocols it had considerable export potential, particularly for European markets.

"The PSI gateway, with associated Viatel products, positions Viatel as a system for delivery of complex data processing applications in an easy-to-use manner," he said.

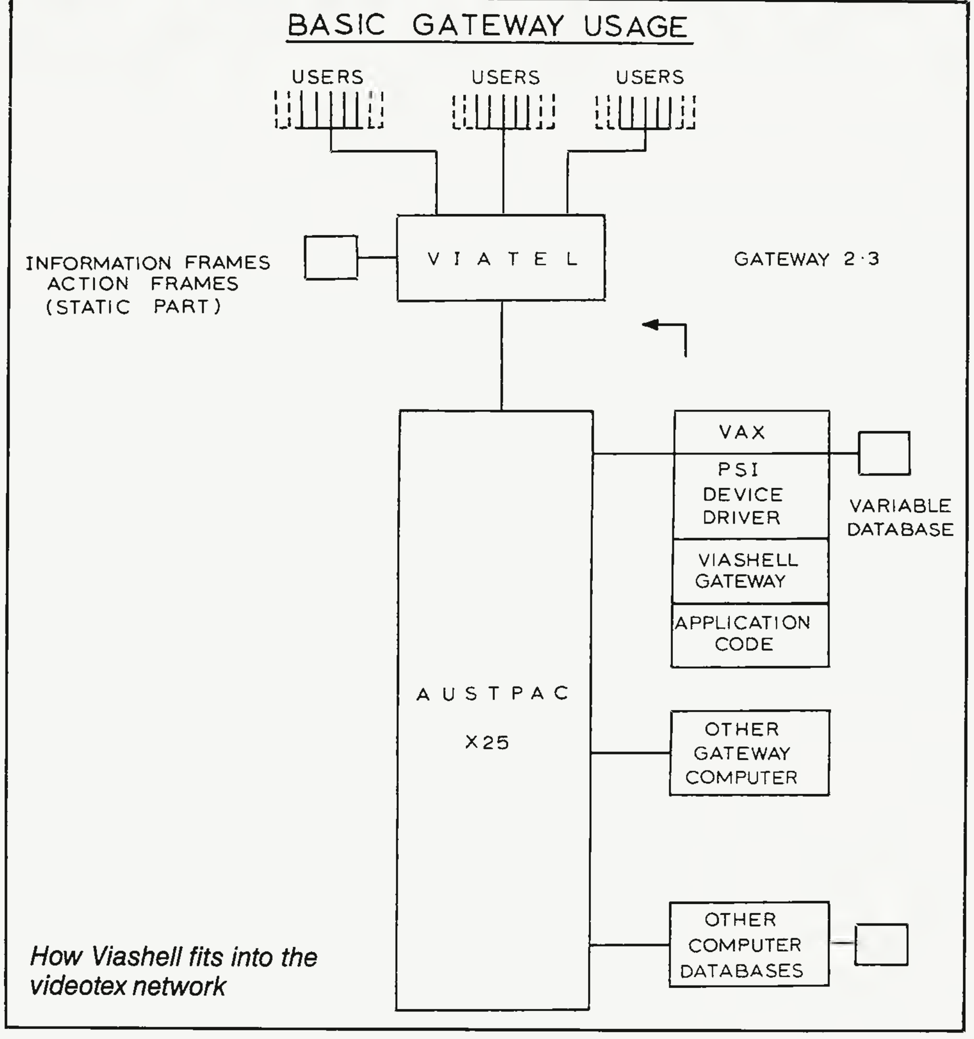
Viashell can be used to interface Cobol or 4GL applications running on Vaxes to Viatel, using packet-switching under the efficient new Gateway 2.3 protocol. It is said to be optimised for sending only the minimum amount of information necessary to interact with Viatel, reducing procesor and network overhead.

It allows multiple gateway entry points and multiple sessions of potentially up to 1000 users by making use of "the best features of the Vax operating system", according to a PSI spokesman. The product's Austpac driver "automatically creates a process for each user".

Viashell supports frame requests, data collection and display under full control by the application residing on the DEC host, the company said.

The ARM data access module can operate on any text file or data in an external database, using pattern matching and logical or numerical operators. Again, multiple users can access the database simultaneously.

A special text loader lets information providers directly read word processor files into the database. An application programmer toolkit is said to ease search and display screen designs.



How Viashell fits into the videotex network

Viatel statistics

AUSTRALIA'S public videotext service, Viatel, now has 28,000 subscribers, according to its manager, Mouli Ganguly.

Some 250,000 calls to Viatel are made each month.

At the end of July, there were 120,000 frames in use on the system, registering 10 million frame accesses.

Some 140,000 mailbox messages were sent during the month, and system uptime was 99.4 per cent.

Local talent latches on

(Continued from page 28)

if and where required. Vianetix Australia paid a substantial royalty for the Vianet source code ("all except the kernel!"), then developed it further for Australian clients. (The US product generally is sold to OEMs, including Wang, NEC, Fortune, NCR and Tandy.)

Since setting up as a study group last year and metamorphosing into a full-fledged company early this year Vianetix Australia has spent considerable R&D effort on the gateway and terminal server products.

Tony Lock, 27 with a degree in computing from the University of WA, has written some 2000 lines of code in C and assembler for the local Vianet presentation manager, some 4000 lines for the gateway server and about the same again for the terminal server. "He has been a very busy boy," said Stone, who is planning share incentives for his staff.

Stone is very happy with Vianet ("it knocks off minis in some cases"), which he describes as similar to Novell's offering but with a distributed peer-to-peer architecture rather than the hierarchical file server approach.

He says Vianet has no hardware dependency ("We've installed Vianet over 3Com hardware because people were not happy with 3Com's software"), uses mainly Dos commands, has only 128Kbytes of Ram overhead and uses up only 10 per cent processing overhead.

It is also one of the lowest-cost Lan solutions available, according to Stone, who says the per-node price is between $A800 and $A1200, depending on the hardware chosen. "All" (99 per cent) Dos standard applications are said to run "and we're looking at adapting those that don't," said Stone.

The gateway software connects PCs to mainframes via the Queensland-made Stallion intelligent serial I/O controller ("We use Australian products as much as we can", said Stone, who does not believe in re-inventing the wheel), supporting between eight and 32 asynchronous channels for $A2000.

Protocol conversion is offloaded to a PCI protocol converter when X.25 or IBM protocols are required. As with Vianet, setup is said to be extremely easy. "It took half an hour to tie PCs to an Amdahl, a HP3000 and a DEC Vax," said Stone.

- *A more detailed description of Vianet will appear on the Network O/S pages in the October issue of Communications World.*

Fault-tolerant Ethernet server software in works

LAN vendor 3Com Corp is testing AT-based fault-tolerant file server technology from Atlantic Microsystems on its Ethernet network and plans to co-market and perhaps re-badge the product.

Atlantic Microsystems is already porting its fault-tolerant software to 3Com's 3Server3 file server. The company has developed two IBM PC AT-based fault-tolerant servers for Ethernet and IBM Token-Ring microcomputer networks. Both products run MS-Dos and support off-the-shelf applications with no modifications, the company said.

Atlantic Microsystems' Me2 is said to enable disk mirroring between two hard disks within a single standalone workstation. The network operator can also assign partitions on the disks. However, if the AT goes down, both disks will crash.

ME2 costs $US385 and is scheduled for next May. A networked version of Me2 that supports 3Com's 3+ software and adapter cards costs $US1285.

3Com is interested in plans for a third version, ported to the 3Server3 and enhanced with features such as disk error correction, according to Atlantic Microsystems.

This version, the Equalizer2, provides yet an even higher level of fault tolerance via mirrored file servers. It requires two ATs, which mirror activity on the primary server to the secondary machine. In the event of a crash, the user merely reboots the backup server and is up and running, the company said. The Equalizer2, which will be demonstrated at PC Expo in New York in September, is not shipping yet.

A 3Com-specific application is expected to cost at least $US7000, including two boards, cabling and software. The Equalizer2 would give 3Com a leg up on rival Novell, which has two levels of its System Fault Tolerant line.

Bigmouth handles PC voice mail

By Jim Brown

OAKLAND, California — Talking Technologies recently introduced Bigmouth, a product that enables a personal computer to handle voice mail and telemarketing tasks.

Using a proprietary algorithm, Bigmouth digitises voice from a standard telephone and passes it in real time to the personal computer, which stores it to disk. Each minute of speech requires 150k-bytes of storage.

Used for voicemail applications, the product can support up to 100 voice mailboxes and store up to 1,000 messages. Messages can be up to 2½ minutes in length.

The voice mail function also supports password security. Users can access voice mailboxes from remote telephones. The product can be programmed to forward messages to another extension.

When used as a telemarketing tool, Bigmouth can be configured to dial a list of telephone numbers and deliver a prerecorded message. Also, it can be configured to record a response to the initial message.

Telemarketing

For inbound telemarketing, the product can answer incoming calls with a prerecorded message. The product can then play back recorded messages instructing the caller to touch a digit to access other prerecorded messages. For example, a caller seeking an interest rate quote from a financial institution can be greeted with a message and instructed to touch one for loan rates and two for savings rates.

The speaker provided with the product enables users to listen to voice messages or monitor call progress without a telephone handset. Once the user picks up the telephone handset, voice output is automatically transferred to the handset.

Optionally, Bigmouth supports a programmer's toolkit, which enables users to integrate voice into personal computer applications. With the toolkit, users can create talking demonstrations, as well as tutorials and applications with sound effects, a company spokeswoman said.

Other standard features include the ability to record voice notes on the PC and an activity log, which time-stamps and dates all activity processed.

The spokeswoman said the product was currently being tested for compatibility with equipment.

It also works in conjunction with burglar alarms or detection systems that support relay switches. Bigmouth can be configured to receive signals from those systems and dial a security company, local police or designated employee to deliver a prerecorded message.

Bigmouth consists of a personal computer addon board, software, twisted-pair cable to link the board to a telephone via modular RJ-11 jacks and an external speaker.

Supporting a single trunk line, Bigmouth requires an IBM PC or compatible with 256K-bytes of random-access memory and Dos 2.0 or above. The firm recommends the use of one floppy disk drive and one hard disk drive but says the product will operate with two floppy disk drives.

The Bigmouth product costs $US239, the programmer's toolkit $79.

Vendors race to market with 10M-bit twisted pair

By Patricia Keefe

FRAMINGHAM, Mass — Major networking vendors are racing to be first to market with what many observers consider a technological breakthrough — 10M-bit/sec Ethernet running over unshielded twisted-pair, or standard telephone, wiring.

Beta-test users of one vendor's product enthusiastically endorsed the technology, which they said was cost-effective and virtually error-free.

Leading the pack of networking companies pursuing the new technology are 3Com and Synoptics. Both have announced fourth-quarter delivery dates and are winding down their beta-testing of separate efforts to port high-speed Ethernet to inexpensive and somewhat unstable telephone wiring.

Competitors, including AT&T, Hewlett-Packard, Digital Equipment Corp (DEC) and Ungermann-Bass, are said to be working on similar projects. AT & T is reportedly readying a 10M bit-sec version of its Starlan to run over its Premises Distribution System cabling.

Running high-speed Ethernet over unshielded, twisted-pair wire is expected to have a significant impact on users, particularly those located in major cities in older buildings already stuffed to capacity with cabling.

Jim Rosen, vice-president of R&D for network reseller Lan Systems, said many users had patched and repatched a tangled mass of various transmission media, had no room for new wire and literally did not know where some wires went.

At the same time, many users are trying to formulate corporatewide, networking strategies, and some are rejecting out of hand any network that requires new wiring. Analysts said this resistance had forced major Ethernet vendors to jump on the telephone wire band-wagon.

Bulk and cost are the primary downsides to broadband and coaxial cable, according to Jeff Kaplan, an analyst with International Data Corp. Both types of wiring can also prove difficult to access. Conversely, twisted-pair is available, inexpensive and easy to use, he says.

A rough breakdown of user wiring costs per foot is about US4c for two-pair, unshielded, twisted-pair wire compared with nearly $US1 for thick coaxial cable.

> ‘ IBM's cabling is too costly and too bulky ’

Users are increasingly endorsing twisted-pair as their cabling of choice for the next five years. Many users say they fear investing in a cabling system that may not meet all their long-term needs.

"A year ago, I was convinced I needed IBM's Cabling System, in part because some of our users needed a high-speed network," said Tad Pinkerton, director of the office of information technology at the University of Wisconsin another Synoptics beta-test site. He rejected IBM's cabling as too costly and too bulky.

The university is testing a 16-node network spread out across two floors of a new computer science centre and is running data and voice-grade wires side by side. Pinkerton said he was enthusiastic about the results. "We have not had a single error," he said.

It is difficult to quantify the cost savings of not having to pull new wire, since every installation is different. But Howard Charney, a 3Com cofounder and vice-president of hardware, said most users could readily compute their own savings.

Synoptics and 3Com have taken separate approaches to solving the problems of running a high-speed network over twisted-pair wires. Although high speeds typically deteriorate over longer distances, both vendors claimed to have resolved that issue. Synoptics is supporting distances up to 100m. Charney said 3Com was supporting a minimum distance of 75m but will go well beyond this.

3Com's system requires one twisted-pair wire; Synoptics' requires two.

"We designed our system on the worst-case assumption that there'd only be one extra twisted-pair wire," Charney said. In that situation, would-be Synoptics users would be forced to pull additional wire, which is exactly what they want to avoid.

AST offers 3270 PS/2 card

AST Research has announced two IBM 3270 terminal emulation cards and an Ethernet interface board for the IBM PC and Personal System/2 series. The AST-Coax II and Coax IIA are AST's first in-house-designed micro-to-mainframe 3270 communications cards for the PC bus and the PS/2 Micro Channel architecture.

Previously, AST sold CXI's Pcox boards on an OEM basis for PC-to-host communications. The boards, scheduled to be available in October for $US895, are compatible with DCA's Irma series of micro-to-mainframe products.

By using AST's high-speed bit-slice communications and coaxial 3270 protocol handler microprogrammable chip sets, the user will reportedly be able to upgrade the system firmware to support new terminal devices and protocols such as LU6.2.

In addition, AST said it plans to unveil for the PC and PS/2 an Ethernet local-area network interface card that will support the Xerox Network Systems protocol now and the Excelan communications standard based on the Transmission Control Protocol/Internet Protocol in the future.

AST declined to elaborate on the Ethernet card, pending its unveiling at the PC Expo in New York on September 1. But announcements reflect AST's desire to expand beyond its role as a memory and addin board vendor and to establish a foothold in the PS/2 enhancement market.

X.25 gateway board from JNA supports 32 virtual circuits

JN Almgren, the Sydney-based communications company, has launched an X.25 gateway card for PCs and compatibles. The Megapac-DialPC card supports dialup packet-switching conforming to the CCITT X.32 standard.

JNA said that while effective for isolated PCs and selected clones, the card's potential for communications cost reduction is best realised if used as an X.32 gateway on Netbios-compatible local area networks.

Operating at 2400 bits/sec over the switched telephone network, the card is said to provide all the end-to-end error protection and multi-session capability users expect from X.25 packet-switching. It offers two communications channels, including an onbord V.22bis modem, and can be programmed for synchronous or asynchronous access. The second channel can be connected to an external Hayes-compatible modem.

Megapac-DialPC does not require the host PC to be dedicated to network access, and it includes background file transfer and "hot key" switching to and from PC-Dos. Serving on a Netbios Lan, the card reportedly supports up to 32 virtual circuits, and any PC may operate up to nine concurrent sessions.

Third-party software such as Access/X.25, Access/QLLC and Attach/X.25 can be used to access asynchronous hosts, 3270 hosts and remote compatible Lans.

Lan backup cassette holds 2G-byte

EMERALD Systems Corp has announced a pocket calculator-size cassette tape device that holds up to 2.2G- bytes of data and is targeted at Lan server users whose hard disk capacity at present exceeds their backup facilities.

Emerald said its Vast Device can hold the equivalent data of 6200 cassettes and 1,000,000 sheets of paper, and will allow managers to replace minicomputers with high-powered microcomputers and will also make it easier for micro users to do their own tape backup.

The Vast Device is aimed at corporations that need to manipulate large databases and have local-area networks using file servers with disk volumes greater than 183M-bytes.

It uses Emerald Systems' helical scan recording technology, which yields a disk-to-tape backup speed of up to 15M-byte/min, a company spokesman said.

Vast Device cassettes are available in four sizes: 250M and 500M bytes and 1G-bytes and 2.2G-bytes.

A "non-obsolescence" feature allows users to start off with just one Vast Devices for unattended data archive capacities of more than 15G-bytes.

The unit measures 40 × 35 × 20cm and interfaces to IBM desktop computers using a 1.5m cable and an Emerald controller board that plugs directly into a desktop system. The device can be installed in a few minutes, according to the company. The product's software can be installed on any IBM system's hard disk.

Asic 'guts' of new PCs

By Steve Gibson

- *Steve Gibson is president of Gibson Research Corp.*

THE growing use of application-specific integrated circuits will not only shrink the physical size of computers but also reduce the various costs both to manufacture and to own such highly integrated machines.

Asic technology gives our industry the ability to turn entire circuit boards of discrete large-scale integration (LSI), medium-scale integration (SSI) "glue" logic into a few square Asic chips. This in turn delivers radically lowered manufacturing costs, wider profit margins, higher reliability, easier serviceability, and smaller machine footprints.

The use of Asics also has another effect on our industry. Let's look at the case of the EGA's Asic use. Since EGA adapters from widely variant suppliers have a common set of Asics, their operational behavior is more likely to be identical than if each individual EGA supplier designed its own EGA in IBM's image. While there is certainly room for limited deliberate intervendor variations, the overall effect is a unifying and homogenising of EGA's operational specifications.

In effect, the use of Asic technology creates incredibly cost-effective "generic" computers whose exteriors may vary but whose "guts" are increasingly based upon proven and developing common Asic standards. Today we are seeing generic PCs, generic EGAs, generic hard disk controllers, and generic Lans. Since every last bit of this innovation stems from market-driven evolution, the computer user, who really is the market after all, is the big winner throughout. So what does Asic technology mean in the context of future innovation?

With Asic technology rapidly gaining the foothold it is, and with it bringing so many clear benefits to the subsystems maker and enduser, I am utterly convinced that the future of PCs belongs to those who push Asic implementations further. The 1- and 4M-bit Ram chips are on the way. We are seeing a rapid standardisation around 80286 and 80386 processors. Couple this with Asic technology to implement the remainder of the "Intel PC Standard" architecture and you have incredible power in an incredibly small space for embarrassingly little money.

The next step in the evolution of the PC, aided by the presence of Asic, will be the development of application-specific personal computers (ASPCs). Built upon a common "generic" foundation of fundamental PC compatibility, these application-specific personal computers will differentiate themselves from the Taiwanese herd by offering tightly integrated functonality that specifically addresses a vertical market niche.

> *'I'm utterly convinced that the future of PCs belongs to those who push Asic implementations further'*

The so-called "diskless workstation" is the first example of such an ASPC. These machines tightly integrate a local area network into their fundamental architectures and, as their name implies, bypass the need for any local hard or floppy disk by "booting" from the network's primary server.

The "winning" network-workstation ASPC will be the one that goes further than simply adding a Lan interface to an otherwise generic PC, since "tight application-specific integration" implies that the fundamental structure of the otherwise generic PC foundation should be customised however necessary to maximise the machine's intended specific function. An example of such customisation might be the addition of a high-speed cache memory buffer managed by an Asic-derived local area network co-processor. This would boost the performance of the entire workstation by allowing the PC's main processor to focus on the user's work while the Lan co-processor, aided by its dedicated Lan cache buffer, runs Lan communications.

However, the notion of an ASPC intended for Lan interactions is just one example of many. ASPCs could be created around the growing needs for high-performance Cad/Cam graphics; multi-user, user-per-processor computing; CD Rom database retrieval with touchscreen interaction; on-line, high-speed database and information access; special spreadsheet support hardware for ultra-fast recalculation and linear systems modelling; high-speed large database access with a controller per head for ultra-high-speed disk index searching; ruggedised factory floor operation; and as many others as you could name.

These systems would all have a PC somewhere in their heart but an architecture strongly biased towards the specific intended application.

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